ALBERTA CAREERS UPDATE 2004

Alberta
HUMAN RESOURCES AND EMPLOYMENT

the people & workplace department

This booklet provides labour market information to help you make career decisions. It can enhance your life and work exploration by helping you:

- understand the effects of the global economy
- understand how social, demographic, technological and environmental trends impact work opportunities
- explore how trends affect work and work roles
- examine work opportunities in 18 Alberta industries
- examine occupational projections for over 500 occupational groups in Alberta
- connect with further information to make life and work decisions.

This publication is available on-line through the Alberta Learning Information Service (ALIS) website—Alberta's leading on-line source for career, learning and employment information. To access this and additional publications, visit **www.alis.gov.ab.ca/careershop**

For copyright information please contact
Alberta Human Resources and Employment
People, Skills and Workplace Resources
Telephone (780) 422-1794
Fax (780) 422-5319
E-mail info@alis.gov.ab.ca

For print copies please contact
Learning Resources Centre
12360–142 Street
Edmonton, AB T5L 4X9
Internet www.alis.gov.ab.ca/careershop
Fax (780) 422-9750
Telephone (780) 427-5775
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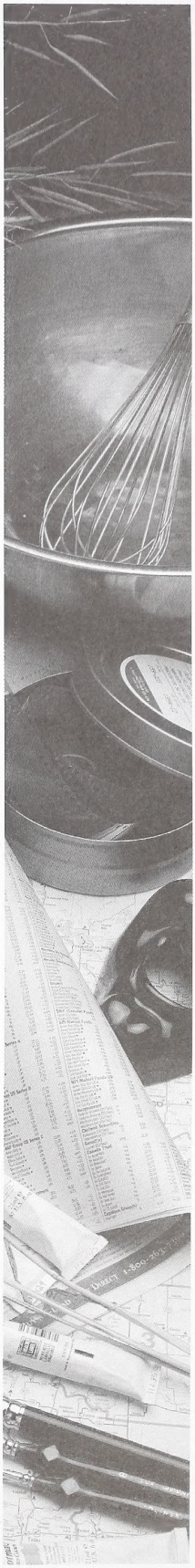


Foreword

You have probably been hearing about globalization, the new economy and economic diversification. You may have also heard the terms knowledge industries, high-tech, e-commerce and outsourcing.

These are exciting words and ideas. But what does it all mean to you as an Albertan? What do you need to know to make the career, training and employment choices that are right for you? What opportunities will be there for you, your children and your grandchildren in the future?

Alberta Careers Update 2004, a followup to the publication *Alberta Careers Update Published 2003*, presents an analysis of economic, social, demographic, technological and workplace trends. It provides updated and current information on Alberta's labour market and workplaces.

This publication contains a detailed review of 18 industries using information from a variety of sources including representatives of Alberta's industries. We would like to thank the people from Alberta companies and organizations who completed interviews with us. Because they took the time to share their industry expertise, this publication more accurately reflects current industry trends in Alberta. This is a valuable part of *Alberta Careers Update 2004* and we truly appreciate this input.

The occupational growth estimates are limited to four years as there are many factors that affect the growth of specific occupations. In most forecasts, the longer the forecast period, the greater the uncertainty. The occupational outlook in Part 3 was compiled using the Alberta-modified COPS (Canadian Occupational Projection System) Outlook 2003-2008.

Occupational outlooks are affected by a variety of factors and will change over time. We encourage you to look for additional information to help you in your career and educational planning.

How to Use this Publication

This publication is divided into three main parts. It is organized so that you can choose as much or as little as you would like to read. You may read all three parts in order or you may choose to read only the part or parts you find most relevant.

The three main parts are as follows:

Part 1: Economics, Change and the Evolving World of Work

If you want to know more about economic, social, demographic, technological, environmental and other factors that affect opportunities for work, then read Part 1.

Part 2: Outlook for Alberta's Major Industries 2004–2008

If you want to know more about the kinds of industries that operate in Alberta and how well they are expected to perform over the next few years, then read Part 2.

Part 3: Occupational Outlooks 2004–2008

If you want to know what occupations are expected to be in demand over the next few years, then read Part 3.

Part 1 and Part 2 provide detailed background information that will help you understand the basis of the occupational projections presented in Part 3.

You may be interested in only the key findings for specific occupational groups found in Part 3. Please feel free to skip directly to Part 3.

Cautions Associated with the Outlook

1. Alberta's economy is significantly tied to the United States' economy. Ninety per cent of Alberta's exports, including energy products, are shipped to the United States. Therefore, a downturn in the United States' economy may affect this outlook.
2. Uncertainty surrounding international relations may also affect this outlook. The international community is experiencing difficulties that include wars, terrorism and strained diplomatic relations. All of this international uncertainty may affect any outlook.

PART 1

Economics, Change and the Evolving World of Work

Analysis of key economic, social and demographic, technological, and workplace trends.

Alberta in a Global Economy

Alberta's economy does not operate in isolation. It is influenced by events in other parts of Canada, the United States and the world in general. Alberta also has its own advantages and characteristics that make its economic situation unique. Together, these economic factors can have a significant impact on the availability of work opportunities. This section looks briefly at some recent trends in the global and Alberta economies.

Trends in the Global Economy

Economically, the world is getting smaller. Information technology has broken down barriers and created global markets for local goods and services. Electronic (e-) commerce and wireless communications continue to grow. New trade partnerships are being formed to create new opportunities for doing business. The global economy has the following characteristics:

- It is a highly competitive trading arena that focuses on innovation, flexibility, speed, productivity, and easy movement of people, information and capital.
- Expanding global markets for manufactured goods are increasing competition, forcing countries to cut taxes and reduce trade barriers.
- As both developed and developing countries deregulate and privatize industry to compete, they become more susceptible to changes in the global marketplace.
- Two significant international market concerns are accessing clean water and managing waste.
- Multinational companies are moving manufacturing to developing countries to address skill shortages and to gain access to cheaper labour.
- Concerns over terrorist attacks cause countries to spend more on security systems.

Trends in the Alberta Economy

With competition in global economies rapidly increasing, industry must be innovative, technological and knowledge-based to remain sustainable. Alberta industries and their partners will need to invest in research and development to help make the shift from industrial to knowledge-based economies. Alberta will need to move away from relying primarily on non-renewable resources to achieve long-term sustainability.

Over the next ten years, the Alberta economy will likely be the strongest in all of Canada. Alberta will:

- **Lead the provinces in economic growth.** Healthy consumer spending, a low cost of living, a competitive tax structure for foreign investment, the oil sands projects and higher labour productivity have contributed to strong economic growth in the

province. As a result, Alberta has lower taxes, lower unemployment and decreasing inflation rates.

- **Enhance the Alberta Advantage.** The Alberta government has worked closely with industry to develop the "Securing Tomorrow's Prosperity" strategy to ensure that Alberta will keep its economic advantage well into the future. By March 31, 2005, the province is expected to be debt free. Through the Alberta SuperNet, the province's broadband network, people and ideas are being connected throughout the province. The assurance that there are real, marketable outlets for research encourages innovation. Spaces are being created in post-secondary institutions so that more students can take high demand programs. Support is being provided to small- and medium-sized business. Economic development is focusing on manufacturing value-added products and services as well as getting more value from Alberta's rich natural resources in a way that protects our environment, health and quality of life.
- **Continue to support a diversified economy.** Energy, tourism, petrochemicals, agri-food processing, information and communications technology, and health and bio-industries represent the wide range of industries in the province. Under the government's economic development strategy, efforts to diversify are continuing. The province will invest $5 million in tourism each year over the next three years. Commercialization of value-added commodities in agri-food processing, petrochemicals, energy, information and communications technology, and health and bio-industries will also assist diversification in Alberta.
- **Lead in innovation and scientific research.** The Alberta government is encouraging agri-processing projects and activities that promote value-added growth, diversification and improved competitiveness. This helps agri-food processors enter new markets or introduce new products by sharing the risk. In addition to agriculture research, both the federal and provincial government finance research projects to promote diversification and innovation. Other research priorities for Alberta include the ability to create new economic opportunities out of traditional strengths in the areas of energy, forestry and health.
- **Benefit from high energy prices.** A combination of low crude oil supply, the threat of terrorist attacks and instability among the Organization of Petroleum Exporting Countries (OPEC) mean energy prices are expected to remain strong. Alberta's economy has benefited from the high energy demand resulting from the recovery of the United States' economy and the emergence of Asian markets. Investment in many of Alberta's energy companies, specifically the oil sands projects, has created more jobs, more capital to expand and more spin-off industries.

Challenges for the Alberta Economy

While Alberta's economic future looks bright, there are a number of things that cause uncertainty:

- **The export-led recovery of the Asian Pacific economies is boosting the world economy.** While Japan continues to recover, China leads the world in economic growth, and Thailand and Vietnam continue to increase exports and investment.

Due to this export-led economic recovery, Europe and the United States are concentrating on investing in Asian Pacific products, potentially disregarding Alberta's exports and manufacturing industries.

- **More skilled labour is needed.** There are not enough skilled workers to meet the needs of Alberta's growing oil, mining, manufacturing and construction industries. Currently, registration in technical schools, trade schools and apprenticeship programs is rising but completion rates remain flat as apprentices leave their programs to seek further education in universities or colleges. Adding to the challenge is the fact that many companies are unwilling to take on apprentices, and higher wages in the field are drawing instructors away from the classroom. Access to learning facilities is a major concern, particularly in northern Alberta. When students leave the north to seek education and training, they rarely return.
- **New ideas and innovations need to be transformed into marketable products.** Alberta has a strong, educated labour force. Initiatives to enhance world-class research, innovation and education in selected areas are underway. The challenge will be to sort through the new ideas generated by these initiatives, pick the most promising ones and then create products that have social and economic value.
- **The Alberta economy is affected by economic uncertainties in the United States.** Factors such as the United States' deficit, interest rates and dollar value have an impact on Alberta's imports and exports. For example, demand for oil and gas in the United States is on the rise so Alberta should continue to prosper in these traditional strengths. A high deficit in the United States discourages foreign investment and hampers their spending on imports. Additionally, a rise in interest rates would dampen spending in Alberta's interest-sensitive sectors such as housing, transportation and construction.

Forces of Change: Recent Trends

Social and Demographic Trends

Social and demographic changes affect Alberta's economy. This in turn affects the demand for occupations. Some recent social and demographic trends in Alberta include:

- **Albertans who are obtaining a higher education are entering the workforce later.** It is increasingly difficult for people age 20 to 24 to sustain themselves financially, especially while attending school. Rising costs in education and the increased cost of living keep many young people living with their parents while they go to school. The transition from school to work is taking longer and is not as smooth as it once was due to the changing economic situation and the expectations of many youth.

Economic Implications: Because of their higher education and training, large student loans, and increased living expenses, youth have high expectations upon entering the workforce. They are looking for high salaries, good benefits and flexible work arrangements. Many employers, faced with increased competitiveness from global markets, consider these expectations unrealistic. Increased job opportunities and labour shortages in some trades allow employees to be selective and demanding in their jobs. Young workers do not feel obligated to be loyal to one employer.

- **Balancing work and family life is a concern for many Albertans.** Alberta families of all types are facing the challenge of balancing time at work and time with family and friends. Today, lone parenting and living alone are more prevalent than in the past. People are also having fewer children. Dual-earner and single parent households have less time for family interactions, childcare and elder care.

  Stress in the workplace is rising. Stress management is important for everyone in this fast-paced, ever-changing society. Employers and governments are putting more emphasis on whole-person health to enhance the quality of both work and home life.

  Employers have a vested interest in promoting a healthy work–family balance to maintain employee satisfaction, decrease stress and to attract and keep employees.

  Economic Implications: Households with single parents are more likely to have a lower income. As lifestyles get busier, there is more demand for child-care and elder care facilities. Easy access to credit may allow people to realize some of their lifestyle expectations but this access is also creating greater debt to savings ratios. Managing debt will become increasingly difficult as the unusually low interest rates start to rise.

  Although many Albertans have incomes above the Canadian average, there are disparities between regions and categories of people. Generally women receive less pay than men for the same type of work.

  Some regions of the province are more prosperous than others. There is a continuing need to provide work and educational opportunities for Albertans and to increase economic activity in the less prosperous regions of the province.

- **Alberta's population is aging.** Alberta has a relatively young population compared to the other provinces, but it is aging. With the front wave of baby boomers now entering their sixties, many will be close to the traditional retirement age around 2010. However, this group of workers appears to be healthier and more interested in remaining in the workforce than previous generations of older workers. The employment rate for Albertans 65 and over is rising.

  Economic Implications: The implications of baby boomers leaving the workplace are numerous. The most obvious implication is the creation of labour shortages. The departure of large numbers of baby boomers may lead to the redesign of pension plans. Some Albertans may rethink the meaning of retirement. They may wish to work or job share for enjoyment, to contribute to the community, or for additional income.

- **Migration into Alberta continues.** Alberta's strong economy continues to draw people from other provinces and countries. However, inter-provincial migration is slowing down due to the rebound of other provincial economies, specifically British Columbia and Ontario. Although a large number of immigrants from other countries continue

to enter the province every year, Alberta is below the national average for attracting and sustaining foreign immigrants. The majority of immigrants to Alberta move to city centres rather than rural areas.

Economic Implications: Most industry sectors are boosted by migration. A slow-down in interprovincial migration and immigration might affect both the housing and real estate industries. There are currently skilled labour shortages in Alberta. Increasingly, immigration will be a key source of Alberta's supply of skilled labour.

Challenges remain around assessing and recognizing the credentials that skilled immigrants bring. A recent study of the underemployment of skilled immigrants in Alberta identified that half of the immigrants who came with a post-secondary credential were not able to fully apply their prior education, training or experience. However, there is a growing consensus on the economic and social importance of improving the integration of immigrants into the labour force and broader society. Several new or expanded services to provide career information, assessment, counselling and training programs for immigrants are either underway or being developed by government and other stakeholders in response to these challenges.

- **Alberta has a growing Aboriginal population.** Alberta's Aboriginal population is younger and growing at a faster rate than the non-Aboriginal population. Presently, the income of Aboriginal people living on reserves is much lower than the income of non-Aboriginal people, and their unemployment rates are higher. The gaps between off-reserve Aboriginal people and the non-Aboriginal population are not as large. Education levels of Aboriginal people have risen but remain lower than the non-Aboriginal population. Just over half of Aboriginal people age 15 and over have completed high school compared to 70 per cent of non-Aboriginal people.

  Economic Implications: The Aboriginal population is becoming a primary labour source, especially for skilled jobs in the northern regions of the province where the Aboriginal population is larger and new industrial projects are underway. There are a number of ongoing educational and training programs underway to overcome the gap between the skills required to work on these projects and the skills of the local Aboriginal population. These include programs offered by the Blue Quills First Nations College and the Sunchild First Nations e-Learning Community.

Technological Trends

Technology is a great enabler of progress and a key driver of social change. Since before the industrial revolution, advances in technology have reshaped the work world. Technology has always been a double-edged sword. On one hand, technology can cause entire groups of jobs and work to disappear. On the other hand, it creates entirely new jobs. For example, there is now work in information systems consulting, web page design, network administration, Internet security systems, e-commerce and technology recycling.

Technology does not always displace existing systems. In fact, different systems can co-exist for long periods of time. For example, the print medium is still very active despite the tremendous growth in electronic media. People still like reading books, magazines and newspapers. Technology will give people more choices and flexibility.

Technology now is knowledge-intensive. This trend includes computers, wireless commu-

nications, telecommunications, robotics, nanotechnology, bioinformatics, laser technology, biotechnology, advanced materials and new power systems such as fuel cells. These technologies are leading to the miniaturization of products. Technology also increases productivity and lowers costs.

Alberta has the highest number of households accessing the Internet in Canada. There is an increasingly high use of computers, within both households and industry. Technology is creating new opportunities for delivering e-learning, e-health, e-government and e-commerce.

Alberta is a wireless industry leader because of extensive research and commitment from industry and government to explore new technology. The Alberta Science and Research Investments Program and the Alberta Science and Research Authority fund university research initiatives that support the province's research and development priorities.

The following sections take a look at trends in a number of areas of technology:

- Information and Communications Technology
- Life Sciences and Technology

Information and Communications Technology

Information and communications technology has penetrated almost every part of our lives. This rapidly growing sector is vital to the improvement of health care, education and the delivery of government services.

- **Management and Information Systems.** These are an organized assembly of resources and procedures required to collect, process and distribute data for use in decision-making. These systems give businesses the competitive intelligence they need to effectively operate, plan and control their computerized data. Research has become an important factor in attracting investors and remaining competitive. Some industry sectors are creating effective information system partnerships to do research.
- **Secure System Components.** These are software applications that protect data from viruses. These components also back up data and recover data from failed computers. These components include firewalls that keep data secure from computer hackers and internal users. There are also content filtering components that prevent employees from opening attachments that may have viruses, or from disclosing confidential information to internal and external users. Private networking is the secure "tunnel" between the corporate server and outside users. It secures the exchange of data.

  As the electronic transmission and storage of personal information increases, there is a growing concern about privacy and the security of that information. Therefore, security for information and communications technology systems is more important than ever before.
- **Increased Investment in Information Technology.** Private and public sector business investment and personal investment in computers and computer software will continue to increase while the prices of this type of equipment are low. Due to the increase in the value of the Canadian dollar and lowered interest rates, computer and software products are relatively inexpensive, making investments in information and communi-

cations technology very cost effective for buyers. The Alberta SuperNet, a broadband communications infrastructure connecting approximately 4,700 facilities in 422 communities, will make information more accessible to rural and remote areas of the province. High-speed networking will set the basis for e-learning, e-health, and e-government in Alberta.

- **Nanotechnology.** Nanotechnology is the science and technology of building electronic circuits and devices from single atoms and molecules. It plays a vital role in health, energy, biotechnology, education, manufacturing, engineering and computer science. The opening of the Institute of Nanotechnology at the University of Alberta in 2005 will contribute significantly to the growth of this emerging research sector.
- **Medical Technology and Health Care.** Medical technology enables health practitioners to detect illnesses earlier and simulate likely reactions to treatments. Research at Alberta universities is advancing knowledge in health care and medical technology. For example, at the University of Calgary there is ongoing research and development of medical robot systems to improve robot microsurgery techniques and test new surgical procedures. Researchers at the University of Lethbridge are studying brain activity and behaviours to resolve neurological disorders. Researchers at the University of Alberta are investigating early brain development and ways to prevent heart disease.

Other key trends in information and communications technology include:

- **People are becoming more aware of both the potential and limitations of information technology.** Information technology has given us a very powerful means of collecting and distributing information. However, it has done little to help sort out what information is useful, relevant and credible, and what is not. This is particularly so with the Internet.
- **Advances in information technology will continue at a strong pace.** There will be more breakthroughs in silicon chip design and fabrication. Voice-activated systems may soon be commercialized on a massive scale. Other devices that continue to be enhanced include smart cards, smart phones and handheld wireless communication devices.
- **Electronic (e-) commerce is the new way of doing business.** Most of this business now focuses on retailing through the Internet. Business-to-business e-commerce is expected to grow considerably over the next five years. E-commerce will revolutionize areas such as procurement, shipping and sales. The number of Albertans using e-commerce continues to grow.
- **The Internet is constantly increasing consumers' choices.** For people who find conventional shopping a chore, the Internet is a welcome alternative. Consumers can choose from a seemingly endless array of products and services. More than anything, information technology has given customers much more choice in products and services and a higher degree of customization. The Internet enables people to research and make informed choices on where to purchase the best products or services at the price they are willing to pay.

- **Portability of products and services is opening up new choices for the consumer.** Electronic products will continue to get smaller and more portable. These products will include additional functions such as voice, data and word processing. Electronic products will build in better connections to office networks. Location will not matter. Organizations will be able to quickly move around people, money and capital.

Life Sciences and Technology

In Alberta there is an emphasis on life sciences that combine science, technology, products and processes related to human health, agriculture, forestry and the environment. Alberta Innovation and Science's focus on life sciences is changing basic research into marketable products. The department provides support and funding for research to accomplish this goal. One program currently being established at the University of Alberta centers on bioinformatics, a science discipline that combines biology, computer science and information technology. Its purpose is to manage large pieces of information, such as DNA. The program teaches computer programming, database development, molecular biology, genetics and information management.

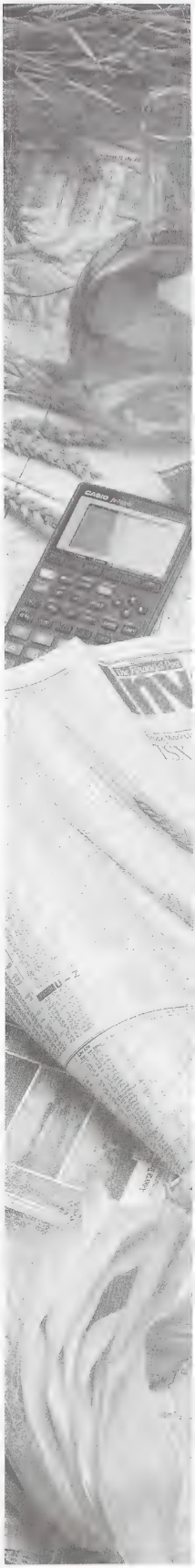
Genetic Engineering involves modifying the structure of genetic material in a living organism in two major areas. The first is the isolation of useful genes from plant or animal cells and the transfer of these genes to microorganisms such as bacteria. The bacteria in turn serve as proliferation for manufacturing facilities. The second process involves transferring useful genes from one plant, animal or microorganism to an unrelated species. The desirable trait will then become part of that species.

Genetic engineering has become a topic of much debate. The science of genetic engineering is complex and is affected by ethical issues. The next few years will determine how far genetic engineering will go and how consumers will respond.

Biotechnology is the application of technology using living organisms, and substances from them, to make or modify products for a practical purpose. They may be microorganisms, such as bacteria or yeasts, or plants and animals, or biological substances, such as enzymes, to perform specific industrial or manufacturing processes to produce specific outcomes. Some applications include the production of better drugs, faster growing wheat, herbicide-resistant canola or organisms to help clean up Alberta's water systems.

Biotechnology in Agriculture. Modern agricultural biotechnology involves a range of different molecular technologies such as gene manipulation and gene transfer, DNA typing and cloning of plants and animals. It can greatly increase productivity in agriculture and the nutritional quality of food. Higher crop yields and better crop resistance to pests and pesticides have been achieved through biotechnology. Many farmers around the globe now grow canola, soybean, cotton and corn that are genetically resistant to some herbicides and insect pests. Other crops close to being brought to market include cereals that are genetically modified to withstand frost and drought.

Canadian consumers are becoming more concerned with the health and environmental safety of genetically modified (GM) foods and products. At the same time, they are becoming more aware and better educated about genetically altered plants and animals in order to make



more informed choices. European consumer advocates are actively trying to stop the introduction of genetically modified products in Europe, at least until the recently approved labeling and tracing rules are put in place. These rules will allow European consumers the ability to choose between genetically modified or non-genetically modified products.

Biotechnology in Health Care. Biotechnology also affects health care, opening up new possibilities in detecting and treating human diseases. Biotechnology is having its biggest impact in medical diagnosis and drug therapy. Today, few diseases are untreatable if detection is early enough. Gene or DNA probes are being developed for primary and early diagnosis. Eventually many of these biotechnology techniques could become available in cheaper and more reliable home-test kits.

Biomedical engineering is an emerging field that combines biology, medicine and engineering to help people discover solutions to medical problems. One recent example of biomedical engineering in Alberta is the discovery of the genes that predispose people to diabetes. With the support of the Alberta Heritage Foundation for Medical Research, Alberta continues to produce world-class medical researchers. The new Alberta Heart Institute at the University of Alberta will become a world leader in heart and lung research.

Biotechnology in the Pharmaceutical Industries. Health-care costs are on the rise due to a number of factors including the increasing costs of prescription drugs, the increased use of dental care, and greater use of hospital services. There are continuing efforts by drug companies to develop super drugs. New drugs for long-term clinical therapies to treat diseases such as cancer, heart disease and immune deficiency diseases are moving through the approval process. These drugs have the potential to lower the health-care costs associated with treating chronic and debilitating diseases.

Environmental Trends

Climate change, the quality of water and air, and waste management are important environmental issues that Alberta businesses and citizens will face in the next decade. Deregulation and legislative requirements related to the environment influence the way industry does business. Businesses will have to find ways to maintain competitiveness while respecting environmental codes. Government, industry and Albertans need to work together to develop ongoing long-term management plans that encompass the whole environment, including water, air, soil and the ecosystem.

Energy

Alberta relies on technological development and research for the economic and sustainable development of the energy sector. The province's conventional oil and gas supplies are declining, and relying on current methods of production is not an option. Energy companies will be encouraged to research new, cost-effective and environmentally friendly ways to enhance resource recovery while continuing to reduce the impact of greenhouse gases and other emissions, and to reduce the consumption of water and gas. Advances will mean more high quality jobs and continuing royalties to support health, education and other important government programs and services into the future.

New technologies will help address concerns about long-term energy supply by increasing

recoveries from existing reserves and freeing resources that would not be recoverable under existing technology. In the coming years, there will also be an increased use of renewable energy resources such as wind, hydro and solar power and a drive to find non-conventional ways to meet increasing demand for secure, reliable, competitively priced energy supplies.

Innovation and Science, through the Alberta Energy Research Institute, has established Energy Innovation Network (EnergyINet), an integrated approach to innovation in energy research with partners in other governments and industry. Six priority areas have been identified: oil sands upgrading, clean carbon technology, carbon dioxide management, recovery of conventional and unconventional oil and gas resources, water management and alternate energy. Alberta's goals to reduce greenhouse gas emissions and address the challenge of climate change include effective emissions trading, environmental offsets and carbon dioxide recovery programs.

Water

Water access is becoming a priority because of drought, population growth and increased demand from coal bed methane, oil and agriculture development. Growing demand and fluctuating water supplies have prompted the government's Water for Life: Alberta's Strategy for Sustainability report and action plan. Alberta's watershed approach accounts for both ground and surface water and considers the needs and interactions of animals, plants, land and people. Communities will be challenged to think about their management and conservation efforts, recognize that water is a finite resource and work collaboratively to manage supply and demand in water resources.

Waste Management

The "4 Rs"—reduce, reuse, recycle and recover—will continue to be cost-effective and responsible ways to handle waste disposal. Recycling not only helps our environment but can also create new businesses that transform items such as glass, metals and plastics into valuable products. Electronic recycling (e-recycling) has become a necessity. The rapid pace of technology growth and replacement has lead to the need to dispose of large numbers of electronic devices such as televisions, video cassette players, computers, printers, compact disc players and digital versatile disc (DVD) players. E-products contain hazardous materials such as lead, mercury, cadmium, PVC plastics and beryllium that can cause significant environmental and health risks if they end up in Alberta landfills. To meet this need, Alberta recently established the first provincial electronic recycling program in Canada. The Alberta Recycling Management Authority (ARMA), a non-profit organization that manages the recycling of motor vehicle tires, will also manage the province wide e-recycling program on behalf of Albertans.

The Evolving World of Work

A Dynamic Workforce

Job and workplace change are continuous. Economic trends can create opportunities in one area and eliminate them in another. New technologies have the same effect. For example, the traditional responsibilities in some jobs such as travel agents may change because the Internet now allows customers to book their own travel. This growing trend may eliminate the need for travel agents or cause this occupation to change its focus. However, there is also a whole host of new jobs being created in information technology, including computer game designers, computer and systems information specialists, network specialists, security systems analysts and webmasters. New jobs are also being created in health care, tourism, training, financial advisory services and business services.

The pace of change in the workplace is accelerating as employers look for more ways to remain economically competitive in the global market. Greater competition has resulted in mergers, acquisitions and company shutdowns, as well as new markets. These conditions force people to be extremely adaptable, and to change occupations more frequently. Attracting and keeping employees is becoming a more crucial factor impacting all industries.

The prevalence of new, compact communication devices gives employees and employers faster, easier access to information and allows them to make and act on decisions quickly. Management structures will evolve as companies themselves adapt to the changing workplace.

Forces Affecting the Workplace

The workplace of the future will be very different for a variety of reasons, including:

- Globalization and Competition
- Alberta's International Marketing Strategy
- Information and Communications Technology
- Employer and Employee Expectations

Globalization and Competition

Information and communications technology has shrunk the world. The global village is now a reality, with economies tightly linked and integrated into a worldwide economic and trading community. Communication goes on 24 hours a day in a highly competitive, multimedia environment. Commerce never stops. Competition in many areas is becoming more global in nature. The downside of this trend is that mergers and acquisitions sometimes decrease competition in the marketplace.

Increased global market pressures are forcing companies to be more productive, to strive to create better products, and to find ways to attract and retain the best talent while remaining competitive in the market place. The workplace will need to shift from confrontation to co-operation in the relationship between unions and employers in realizing common goals and remaining competitive in the marketplace.

Alberta's International Marketing Strategy

Industrial manufacturing is highly competitive and volatile now that countries such as China and India, who produce items very inexpensively, are increasing their involvement in the sector. Alberta's International Marketing Strategy focuses on key export markets for Alberta's value-added manufactured products and services. The strategy is designed to enhance the role of small and medium-sized enterprises by supporting their efforts to find clients, partners, distributors and investors in foreign countries.

As emerging markets such as China, India, Indonesia and Thailand become more active in the global economy, they will be challenged to re-evaluate their current practices and become more environmentally conscious. When they find it necessary to upgrade their infrastructures, these countries will become good markets for products that protect the environment. These kinds of products could be produced and exported from Alberta.

Information and Communications Technology

Information and communications technology has enabled a great deal of workplace change. Networked computers, teleconferencing, videoconferencing, cable, microwave, wireless and satellite communications all make the new economy work. An electronic environment has made location almost irrelevant, enhanced co-worker communication and blurred business hours. In this technology-rich environment, employees need to retrain periodically to keep up with new software applications to help businesses run as efficiently as possible.

A drawback of being able to work practically anywhere, anytime, is that social interactions are reduced. Indeed, there is a waning interest in the home-based businesses that gained popularity in the late 1990s. People miss the social aspect of work. A future challenge is going to be developing and using technology to create a more socially connected environment for people working at remote sites.

Employer and Employee Expectations

The expectations of both employers and employees change as the marketplace and society change. Increased competition and the rapid pace of change places a higher demand on both employee and employer productivity and adaptability. Employers express concerns about employees' communication skills, their ability to interact effectively in the working environment and the need for lifelong learning. Employees mention the stress caused by longer work hours, increased job demands and continuing changes in technology. Research has shown that people in high stress jobs have increased rates of chronic illnesses. Employers and employees will need to work cooperatively to resolve these and other workplace issues if they are going to be successful in creating a more healthy and productive workplace.

The Characteristics of the 21st Century Workers

Clearly, there are many forces acting upon the workplace and therefore the worker. To be successful, workers will most likely need to possess the following characteristics (these are not listed in any particular order):

- high level of initiative and imagination
- high degree of flexibility

- focus on innovation and creative solutions to problems
- constantly questioning mind
- entrepreneurial nature.

Workers will also need to be:

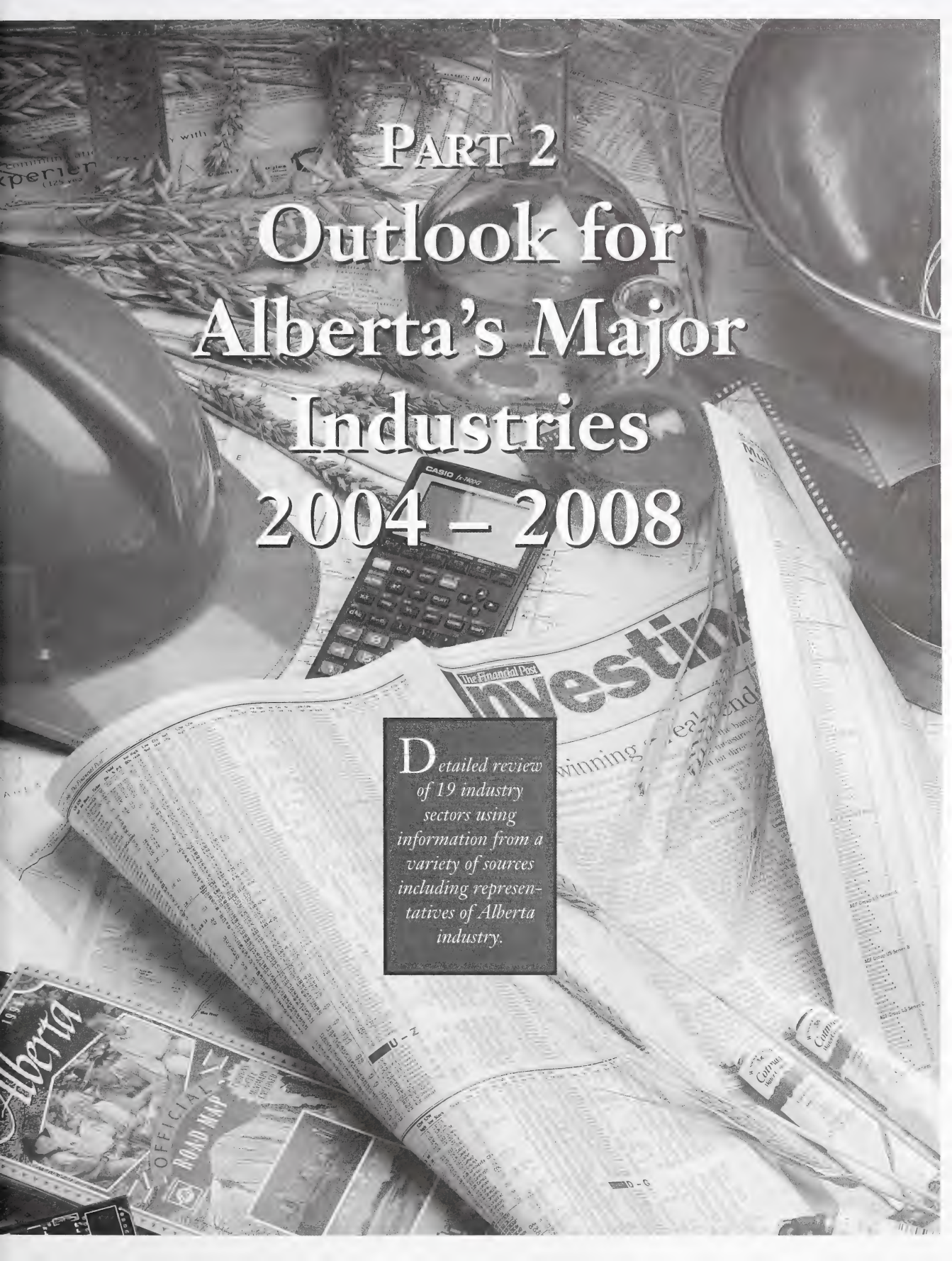
- multifunctional
- accountable
- good communicators
- computer and communications literate
- self-directed team players
- willing to learn, to upgrade skills, and to accept accountability
- willing to propose ideas for a healthy work environment.

The Characteristics of the 21st Century Workplace

The agents of change discussed so far have had, and will continue to have, a profound impact on the workplace. The workplace of the 21st century will likely have the following characteristics (these are not listed in any particular order):

- integrated learning and training opportunities
- cultural diversity
- emphasis on team environments, learning skills from co-workers and communicating ideas to one another
- healthy and safe working environments, with an emphasis on preventative health care solutions
- new and more effective workplace structures
- more flexible work patterns, telecommuting, job-sharing, part-time work and combination-jobs
- a focus on knowledge management and enhancement
- more sophisticated technology
- a focus on customer service
- a more entrepreneurial focus, with an emphasis on competitiveness and productivity.

Part 1 of *Alberta Careers Update 2004* briefly discussed economic, social, demographic, technological and environmental trends. It also looked at the evolving world of work. In Part 2 we will examine what is happening within Alberta's major industries. Industrial activity has a huge impact on the growth of and demand for occupations. General information is provided for each of Alberta's 18 key industries, as well as projected growth over the next four years.



Part 2
Outlook for Alberta's Major Industries 2004 – 2008

Detailed review of 19 industry sectors using information from a variety of sources including representatives of Alberta industry.

Overall Growth

Before we can predict which occupations will likely be in high demand in the coming years, we need to first understand what is happening within Alberta's key industries. Each industry reacts differently to the developing and continuing trends we have discussed so far:

- trends in the global economy
- trends in the Alberta economy
- social and demographic trends
- technological trends
- environmental trends
- workplace trends.

Overall, the Alberta economy is expected to build upon its prosperity. The provincial economy will continue to diversify, and although Oil and Natural Gas Extraction will continue to play an important role in future growth, other industries are expected to contribute to Alberta's economic success. Strong employment growth is expected in Utilities, in Manufacturing, and in Professional, Scientific and Technical Services. An aging population means that the Health Care and Social Assistance industry will also play a significant role in employment growth. The coming years will see an emphasis placed on the value-added processing of raw materials within the province, which will take full advantage of Alberta's natural resources.

The strength of so many different industries points to a strong Alberta economy. However, each industry needs to be able to adapt quickly to the challenges that will present themselves in the future in order to assure continued prosperity for the province.

Growth Rates by Industry

Following are overviews and outlooks for each of Alberta's 18 major industries as defined by the North American Industry Classification System (NAICS). The 18 industries are listed alphabetically. These industry projections are based on information from a variety of sources including representatives of Alberta industry and provincial government departments.

The 18 industries discussed in Part 2 are:

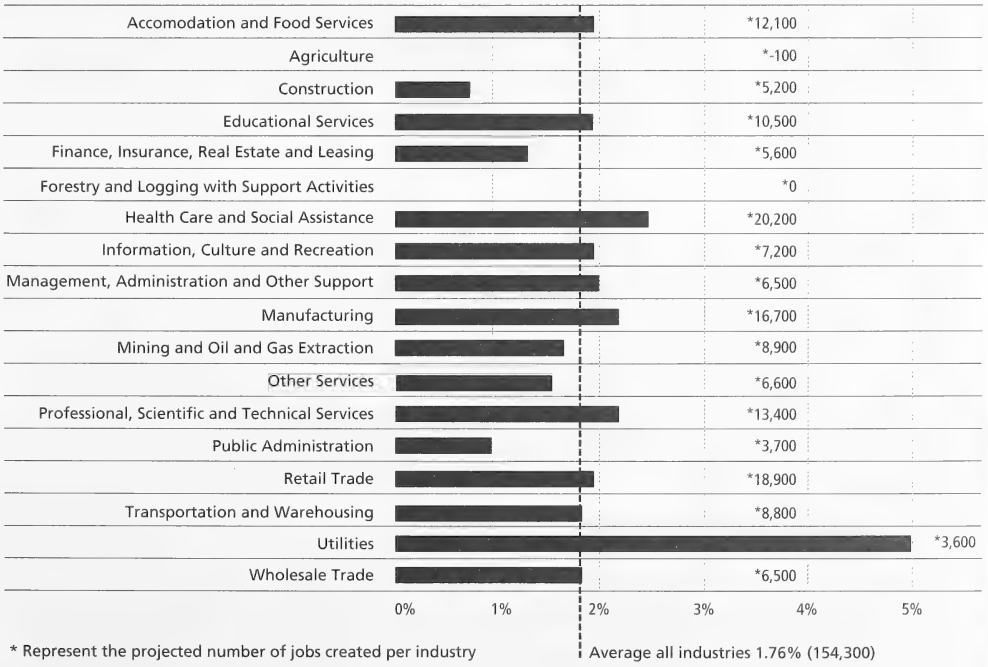
- Accommodation and Food Services
- Agriculture
- Construction

- Educational Services
- Finance, Insurance, Real Estate and Leasing
- Forestry and Logging with Support Activities
- Health Care and Social Assistance
- Information, Culture and Recreation
- Management, Administrative and Other Support
- Manufacturing
- Mining, and Oil and Gas Extraction
- Other Services (except Public Administration)
- Professional, Scientific and Technical Services
- Public Administration
- Retail Trade
- Transportation and Warehousing
- Utilities
- Wholesale Trade.

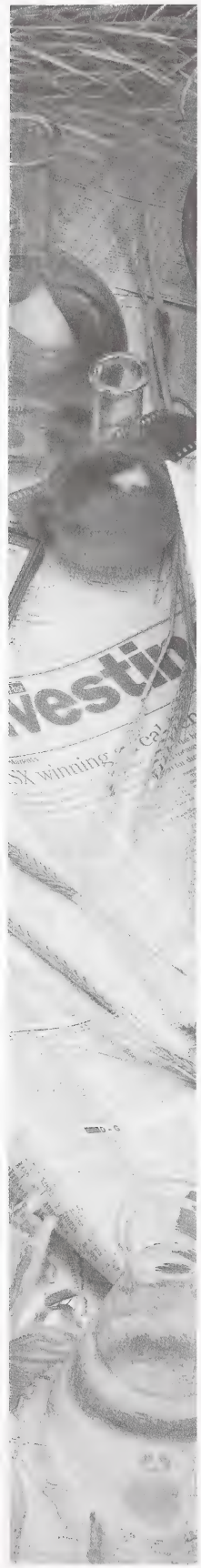
Overall Employment

- In 2003, there were 1,721,700 people employed in Alberta.
- The yearly average unemployment rate was 5.1 per cent.
- Employment is expected to grow by approximately 1.8 per cent annually to 1,876,200 in 2008.

Alberta Employment Growth Rates by Industry 2004 – 2008



* Represent the projected number of jobs created per industry



Accommodation and Food Services

Overview

The Accommodation and Food Services industry consists of businesses that provide customers with lodging or prepare meals, snacks and beverages for immediate consumption. The industry includes both accommodation and food services establishments because these services are often provided in the same place.

This industry employed about 121,600 people in Alberta in 2003.

Outlook

The Accommodation and Food Services industry is growing around the world. In Alberta, the absence of a provincial sales tax, a pristine environment and world class tourist destinations like Banff, Jasper, Lake Louise and the Canadian badlands make our province a prime tourist attraction. Hundreds of thousands of tourists come to Alberta for annual events such as the Calgary Stampede, the Edmonton Fringe Theatre Festival and the Canadian Finals Rodeo.

Over the next decade, changing demographics will drive growth in tourism. Aging baby boomers with more money to spend will likely take more trips. There should also be more soft adventure trips and a rise in eco-tourism (tourism that leaves natural settings undisturbed).

The Accommodation and Food Services industry is affected by changes in consumer food preferences as more people recognize the importance of a healthy lifestyle. This industry is also affected by the value of the Canadian dollar, gasoline prices, security concerns and airfares.

Employment in the Accommodation and Food Services industry is expected to grow by a yearly average of 1.9 per cent, employing about 133,700 in 2008. The 2003 unemployment rate was 6.5 per cent.

Agriculture

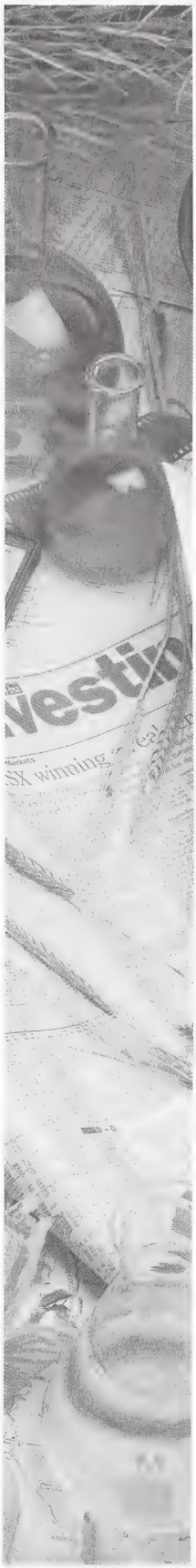
Overview

The Agriculture industry is primarily engaged in growing crops and raising animals. The two basic activities within this industry are agricultural production and agricultural support activities. Agricultural production includes the complete farm or ranch operation, such as farm owner/operators, tenant farm operators and sharecroppers. Agricultural support activities include businesses that perform, on a contract or fee basis, one or more of the activities associated with farm operation, such as soil preparation, planting, harvesting or management.

This industry employed about 68,200 people in 2003.

Outlook

Agricultural production in Alberta will continue to emphasize more value-added production through food processing. The United States' farm bill affects this industry in Alberta and in Canada. Under the farm bill, agricultural producers in the United States will receive about



$180 billion U.S. in new subsidies over the next 10 years. This will affect the ability of Alberta's farmers to compete. A strong Canadian dollar, American import tariffs, border crossing requirements and the ban on Canadian cattle due to the discovery of a single case of bovine spongiform encephalopathy (BSE) in Alberta may also hurt exports. However, the longer-term outlook for barley and canola production remains positive, especially if Europe moves to reduce agricultural subsidies.

The Agriculture industry will continue to diversify into alternative crops. Pork and poultry production look promising. The poultry industry is expected to thrive since it has managed to avoid the full effect of the avian flu. However, food tastes are changing in North America, affected by changing demographics (including an aging population and young people who eat less meat), concern about nutrition, and sweeping diet trends such as the currently prevalent high-protein, low-carbohydrate diet. The trend towards healthier eating habits could lead to opportunities for fruit and vegetable production as well as organically grown products.

The industry will continue to increase productivity through new applications of biotechnology and information technology. More processes will be automated as the Agriculture industry seeks new ways to address the high cost of labour and labour shortages. For example, some farms now have tractors and other equipment that are partially guided by global positioning navigation systems (GPS). Farms will get larger. There will be a more diverse range of employment opportunities in agriculture operations, from labourers to production supervisors.

Food safety programs will gain momentum as environmental issues become more important.

Employment in the Agriculture industry is expected to remain the same, employing about 68,100 people in 2008. The industry is expected to lose workers to other employment opportunities. The 2003 unemployment rate was unavailable.

Construction

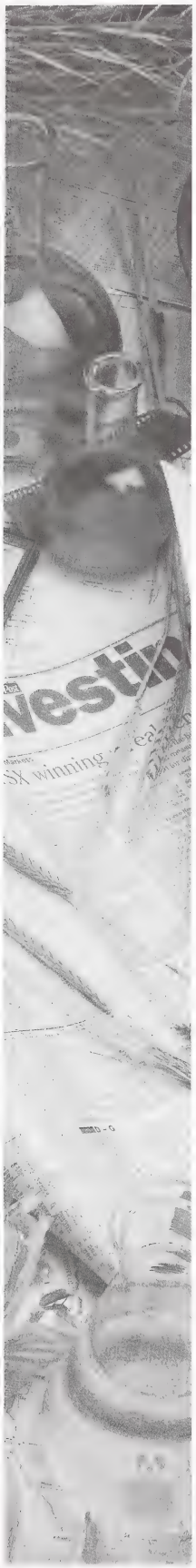
Overview

The Construction industry is primarily engaged in constructing buildings or engineering projects. Construction work may include new work, additions, alterations, maintenance and repairs. Industrial or Engineering Construction covers the building of dams, highways and pipelines. Commercial or Business Construction includes the construction of high-rise buildings as well as shops and malls. Residential Construction includes the building of homes and apartment blocks.

This industry employed about 144,200 people in 2003.

Outlook

Alberta's Construction industry is expected to grow in a variety of areas. Major projects in the development of in-situ and mineable bitumen (oil sands) reserves are expected to proceed in the northeast region of the province. Power plant and petrochemical developments are also expected to move forward. The high price of oil should lead to expansion in construction investment. New materials and methods will result in less demand for



maintenance-type workers. The industrial construction industry will likely be most affected by these issues.

Leadership in Energy and Environmental Design (LEED), a voluntary and consensus-based national standard for developing high-performance sustainable buildings, is increasing the cost of construction and design. It is based on well-founded scientific standards, and emphasizes state of the art strategies for sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

Residential construction will likely slow down slightly but still remain at relatively high levels. There will continue to be a shortage of construction workers during peak periods of activity, especially in trades and sub-trades such as masonry, drywall and stucco. Some construction workers are receiving higher wages and may be more selective about the projects they accept. This may be particularly true for older workers.

Employment in the Construction industry is expected to grow by a yearly average of about 0.7 per cent, employing about 149,400 in 2008. The 2003 unemployment rate was 7.6 per cent.

Educational Services

Overview

The Educational Services industry provides instruction and training in a wide variety of subjects. Schools, colleges, universities and training centres provide this instruction and training. These establishments may be privately or publicly owned. They may also offer food and accommodation services to their students.

This industry employed about 108,300 people in 2003.

Outlook

In the future, the Educational Services industry has the potential to expand globally. Alberta's educational institutions are in a good position to penetrate the international market and will begin to do so with the opening of an Alberta kindergarten to Grade 12 school in Heilongjiang, China, in 2005. Albertans themselves will have access to educational programs from across the globe.

Technological change is a major trend that will continue to affect education. The future focus will be offering choices in where, when, what and how education is delivered. Conventional teaching methods will still be important and will be supported more and more by video conferencing, CD-ROM applications, Internet technology and new computer-automated systems. Information and communications technology opens up endless choices for the learner, including major expansions in distance and home-based systems. With all this technology, lifelong learning becomes crucial. There is a growing need for teachers to update their technical skills as technology changes.

A future challenge for the Educational Services industry will be to find new graduates to work in the industry. There will probably be a shortage of second language teachers, especially in rural areas, when changes in the school curriculum come into effect beginning in 2006. (The change requires all students in Grades 4 to 9 to study one of eight second languages.) New graduates with specialties in areas that are in high demand elsewhere in the economy

may leave the Educational Services industry to work for higher wages in the private sector. For example, the Career and Technology Studies' technology education stream (which includes construction and electro-technologies) is expected to experience hiring difficulties in the future. Another factor affecting the supply of new teachers in Alberta is the high demand for teachers in the United States. The American salaries for teachers are equivalent but paid in U.S. dollars and this may draw new graduates out of Canada.

The demand for post-secondary education continues to increase. The post-secondary system is responding by building access through a number of mechanisms. The Campus Alberta Quality Council, established under new legislation, will enhance access to new degree-completion opportunities. Both public and private institutions around the province will have greater flexibility to respond to student needs. There are also more opportunities for enhancing on-line learning and options for alternate program delivery at Alberta's post-secondary institutions. Province-wide, public institutions are expanding through the government's Access Fund to meet the needs of students in areas of high priority such as health and other degree programs.

Employment in the Educational Services industry is expected to grow by a yearly average of 1.9 per cent, employing about 118,800 in 2008. The 2003 unemployment rate was 3.5 per cent.

Finance, Insurance, Real Estate and Leasing

Overview

The Finance and Insurance industry consists of businesses primarily engaged in financial transactions (transactions involving the creation, liquidation or change in ownership of financial assets) or in facilitating financial transactions.

The Real Estate, Rental and Leasing industry is made up of businesses that rent, lease or otherwise allow the use of their assets by others. The assets may be tangible, as is the case of real estate and equipment, or intangible, as is the case of patents and trademarks.

This industry employed about 87,000 people in 2003.

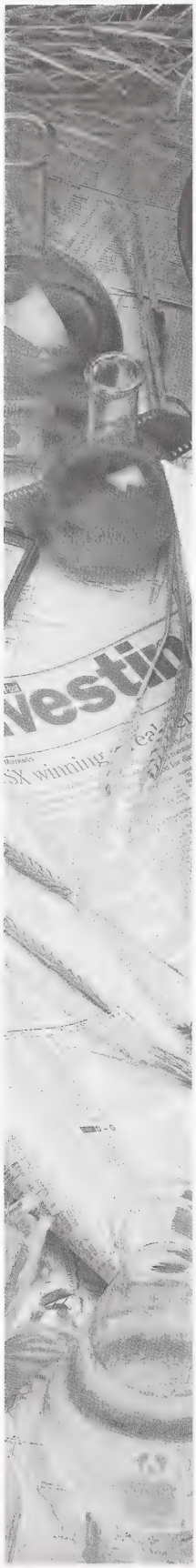
Outlook

The banking business will be driven by changes in demographics and changes in information and communications technology. Most routine functions will be done through automated banking machines (ABMs) or Internet banking. There will likely be no growth in the number of bank branches. However, investment counselling and estate planning will likely expand due to an aging baby boom population that uses these services.

The Insurance industry will become more complex. Insurance rates have recently increased and will likely continue to rise. This is due in part to an increased desire for security and higher costs of litigation. There will also be new coverage options as well as the addition of newly developed terrorism exclusion clauses.

Alberta's Real Estate industry will likely stay active. Although Alberta's cities are experiencing low vacancy rates and more owners are selling their own properties, lawyers and real estate agents will still process and complete real estate sales.

Employment in the Finance, Insurance, Real Estate and Leasing industry is expected to



grow by a yearly average of about 1.3 per cent, employing about 92,600 in 2008. The 2003 unemployment rate was 2.2 per cent.

Forestry and Logging with Support Activities

Overview

Businesses in the Forestry and Logging industry grow and harvest timber on a long production cycle (10 years or more). Long production cycles use different production processes than short production cycles. Short cycles require more horticultural interventions prior to harvest, resulting in processes similar to those found in the Agriculture industry.

This industry employed about 4,900 people in 2003.

Outlook

The Forestry and Logging industry is efficient and competes globally. It will continue to improve and rely more on new technology. There will be improvements to information systems, harvesting technology, geographic information systems (GIS) and computer modeling to reduce environmental impact. There will be continuing efforts to develop new techniques to address air and water quality issues.

Strong pricing is expected to persist over the next few years because there is a high demand from the construction industry, and reduced supply due to forest fires in British Columbia. There is also optimism surrounding recent decisions favouring the removal of high United States import duties on lumber by a North American Free Trade Agreement (NAFTA) panel and the United States-based Coalition for Fair Lumber Imports.

The industry's growth will be affected by the potential for increased conflicts surrounding the multiple uses of Crown land. In the sensitive terrain of the foothills environments, Forestry sometimes competes with the Mining and Oil and Gas Extraction industry, the Agriculture industry, and the tourism-reliant Accommodation and Food Services industry. Many of these industries are working co-operatively to minimize conflicts and to reduce the cumulative impacts of their operations on the environment. An additional challenge for the industry is going to be the predicted shortage of truck drivers to transport both logs and processed materials.

Employment in the Forestry and Logging industry is expected to remain the same, at 0 per cent growth, with 4,900 employees in 2008. The 2003 unemployment rate was unavailable.

Health Care and Social Assistance

Overview

The Health Care and Social Assistance industry consists of organizations and institutions primarily involved in providing health care and social assistance services to individuals. Health care services are provided at hospitals, nursing homes and residential care facilities, out-patient care centres, medical and diagnostic laboratories and the offices of health practitioners such as dentists, doctors, optometrists and chiropractors. Home health care services and ambulance services are also part of this industry. Social assistance services include

individual and family services (for children, youth and the elderly), community food, housing, emergency and relief services, vocational rehabilitation services and day care services.

This industry employed about 161,200 people in 2003.

Outlook

Some people believe that trying to meet the health care needs of an aging population is the major challenge of this new century. Alberta's population is somewhat younger than the Canadian average, but it is still aging. The pressures that come with an aging population will become stronger around 2010. With the front wave of baby boomers now entering their sixties, demand for assisted living facilities and seniors' housing will likely increase. The aging population means there will be greater demand for services, but there will be fewer workers available to provide these services.

There are many occupations with shortages in the Health Care industry, especially skilled health care professionals. The industry will have to use innovative strategies to attract the necessary workers. Demand for health care professionals in the United States will likely continue to draw labour from Alberta. However, many immigrant health professionals will have an opportunity to move into the industry as foreign credentials are validated.

New technological developments will have a huge impact on the Health Care industry. There will be new (and expensive) super drugs, genetically engineered drugs, new diagnostic techniques, gene therapy and wider applications of endosurgery (surgery that uses new technology to be as minimally invasive as possible). Nanotechnology will assist in early diagnosis and medical breakthroughs. Information and communications technology will become more common in the form of telehealth and long-distance diagnostics, bedside monitoring and eventually robotically-assisted surgery. Information and communications technology will reduce administration and information costs. The continuing development of the Alberta Electronic Health Record will allow all health service providers to seamlessly and securely share medical information.

Health Care and Social Assistance will probably be delivered very differently in the future. There are more integrated, community-based systems to provide services. This is already true in the area of health care, particularly in the area of mental health. There will be pressure to improve services in this area and other areas of Social Assistance. The trend will likely be towards smaller providers, moving away from larger institutions.

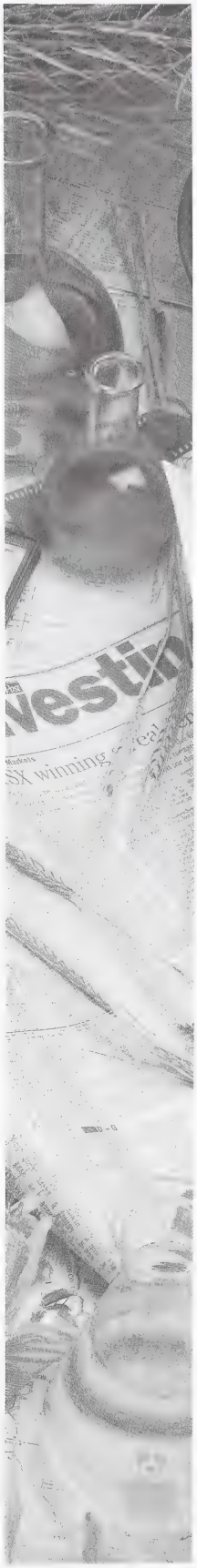
The future will see a greater emphasis on preventative health care and whole-person health.

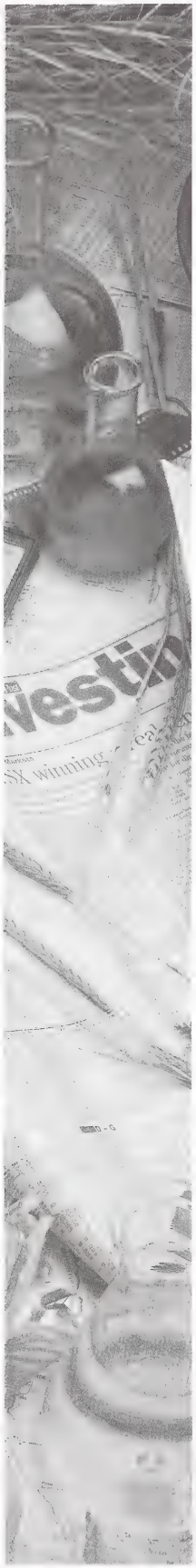
Employment in the Health Care and Social Assistance industry is expected to grow by a yearly average of about 2.4 per cent, employing about 181,400 in 2008. The 2003 unemployment rate was 1.6 per cent.

Information, Culture and Recreation

Overview

The main components of this industry are the publishing industries (including software publishing, traditional publishing and publishing on the Internet), the broadcasting industries (including traditional broadcasting and broadcasting over the Internet), the motion picture





and sound recording industries, the telecommunications industries, the industries known as Internet service providers and web search portals, the data processing industries, and the information services industries.

The expressions "information age" and "global information economy" are used with considerable frequency today. The general idea of an information economy includes both the notion of industries producing, processing and distributing information, and the idea that every industry is using available information and information technology to reorganize and make themselves more productive.

The Recreation industry includes a wide range of businesses and organizations that operate facilities or provide services to meet the varied cultural, entertainment and recreational interests of their patrons.

This industry employed about 71,700 people in 2003.

Outlook

Most Albertans are comfortable with information technology. Over 50 per cent of Albertans use the Internet, the highest ratio in Canada. Mobile phone coverage is available in 55 per cent of the province's total area, representing the best coverage in Canada. Demand for service is now driven less by simple voice calls and more by complex and advanced services like high speed Internet and sophisticated business networks. Broadband technology—the technology that delivers high speed Internet—is steadily becoming more and more popular and should thrive due to Alberta's strong overall economy and its technologically able population. The large oil and gas industry also creates huge demand for wireless telecommunications services. Voice over Internet Protocol (VOIP) presents new opportunities for Internet-based telephone service. Increased competition from new telecommunications carriers in the Alberta market is expected to continue.

Technological advancements in the Printing and Publishing industry have stabilized and should not further affect employment. Alberta will remain a prime destination for movie and TV producers due to its natural beauty and the low cost of doing business here.

In the Recreation industry, there will be a growing need for health clubs to develop and implement a standard level of training and practice for fitness trainers. Currently, it is difficult for some employers to effectively compare one trainer's abilities to another.

Employment in the Information, Culture and Recreation industry is expected to grow by a yearly average of 1.9 per cent, employing about 78,900 in 2008. The 2003 unemployment rate was 4.7 per cent.

Management, Administrative and Other Support

Overview

The Management industry covers two areas: companies that hold the equity interests of other companies in order to control or influence management decisions and companies (excluding government) that administer, oversee and manage the enterprises, taking on a strategic or decision-making role.

The Administrative and Other Support industry consists of companies that perform routine support activities for the day-to-day operations of other organizations. Activities may

include office administration, hiring and placing of personnel, document preparation, clerical services, solicitation, collection, security and surveillance services, and cleaning and waste disposal services. Travel agencies are also part of this industry.

This industry employed about 63,600 people in 2003.

Outlook

This industry is broad and far-reaching. It will see growth in the coming years. The business trend of reducing costs and boosting productivity may lead to an increase in using staffing agencies as a source of temporary labour. The promising outlook for telecommunication should lead to an increase in the demand for call centres.

There will continue to be activity in the area of travel-related services. Even though more people are booking their own air travel on-line, travel packages (many of which can only be booked through travel agencies) will increase in popularity as consumers look for ways to save money. There will be more specialty travel agents, resulting in more sophisticated promotions, packaging and processing through the electronic media. Instability in the airline industry could have negative effects on this industry.

In another area of the industry, garbage collection and disposal is going to be a challenge in the coming years, as it continues to pose serious problems for large communities such as Calgary and Edmonton.

Employment in the Management, Administrative and Other Support industry is expected to grow by a yearly average of 2.0 per cent, employing about 70,100 in 2008. The 2003 unemployment rate was 6.7 per cent.

Manufacturing

Overview

The Manufacturing industry is made up of businesses engaged in the mechanical, physical or chemical transformation of materials, substances or components into new products.

Manufacturing plants, factories or mills process materials or may contract with other establishments to process their materials for them. Both types of businesses are included in the Manufacturing industry.

This industry employed about 147,800 people in 2003.

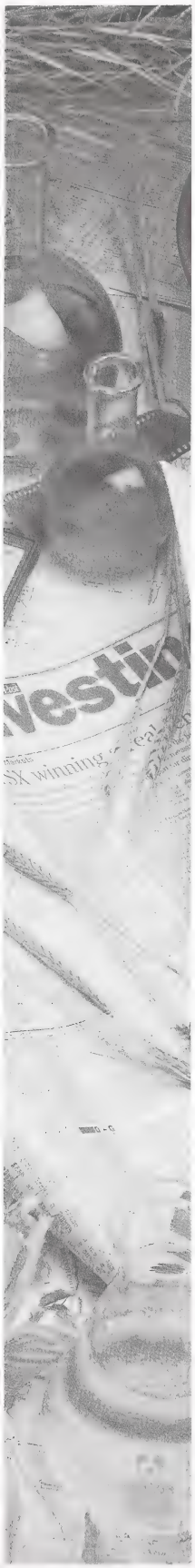
Outlook – Overall

"Lean" manufacturing (less time, less inventory, fewer workers and less space) is an ongoing trend in which companies aim to eliminate waste in every aspect of production. It is similar in concept to the "just in time" manufacturing process (time efficiency and little or no inventory of materials to reduce warehousing needs and waste) developed in Japan.

Outlook – Metals, Metal Fabrication and Machinery

A strong Oil and Gas industry will maintain demand for metal products and machinery, but the province will be facing a shortage of welders, machinists and pipefitters in the near future.

Competition within metal fabrication is intensifying. Major project owners are consolidating and bidding practices are focusing more on cost reduction. Companies are



seeking longer-term relationships with suppliers in an attempt to save money and streamline processes. There is a need for more quality educational programs to train workers in this industry. Certification by the International Standards Organization is becoming more common.

Outlook – Petrochemicals and Chemicals

The three major components of Alberta's Chemical industry are ethylene and derivatives, methanol, and fertilizers. The industry is being led by ethylene and derivatives production, which is dependent on ethane extracted from natural gas. Alberta produces five per cent of the world's ethylene.

Several large international chemical companies operate in Alberta.

New developments include the co-generation of electric power and heat using combined cycle gas turbines (CCGTs). Power will be produced for internal use and excess power may be sold into the Alberta grid. This economical and efficient electricity generation was facilitated through restructuring of Alberta's electric industry and is one reason Alberta, unlike many jurisdictions, does not face electricity supply shortages.

The main chemical growth will be in polyethylene and the production of linear alpha olefins (LAOs). Until the largest ethylene production facility in the world opened in Joffre, LAOs had to be imported from the United States. This will continue to be an important industry for Alberta.

Outlook – Food and Beverage Products

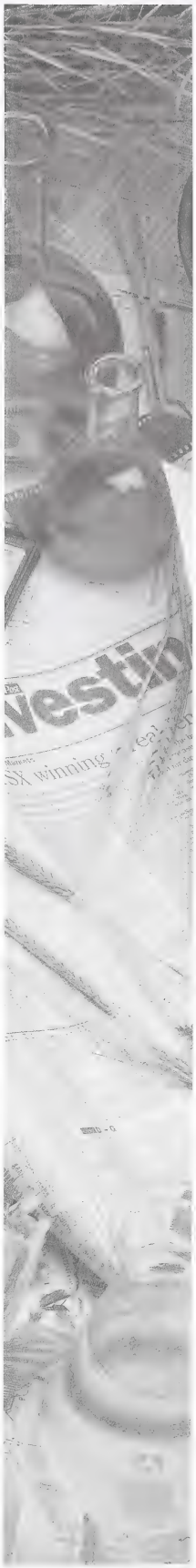
Demographic and lifestyle changes are creating small niche markets for things such as specialty foods, organic food and reduced-carbohydrate products. Growth opportunities exist in exotic foods, health foods and genetically modified foods. Health concerns are becoming an issue. Nutraceuticals (health supplements) will continue to become more popular. Food safety and environmental safety will continue to be of great importance. International trade issues are an ongoing concern due to the discovery of a single case of BSE in Alberta. This industry is also affected by the high costs of properly disposing of plant waste materials, a process that is highly regulated by environmental agencies.

Technological advances have created the need for technical skills in this industry. The need for specialized training results in many employers offering comprehensive in-house training programs. High staff turnover is a challenge. Employers cite a need to attract long-term employees to avoid constant retraining. Plant robotics are evolving and may reduce the need for unskilled labour.

Outlook – Wood Product Manufacturing

Future growth will be mainly in the value-added manufacturing industry. One-third of all wood products are exported to the United States. There is optimism surrounding recent decisions favoring the removal of high American import duties by a NAFTA panel and the United States-based Coalition for Fair Lumber Imports. Removal of these duties and tariffs will reduce the cost of Canadian lumber imports to the United States. As a result, an increase in lumber products imported by the United States is expected.

A growing challenge is the shortage of truck drivers to transport both logs and processed materials.



Outlook – Printing and Related Support Activities

While electronic mail and media are cost effective, they are not expected to replace print media. The Printing industry is vulnerable to competition from American firms. As Canada aims to protect the industry, free trade clashes may develop. The high capital costs of entering the printing business may deter potential new companies, but create growth opportunities for existing companies. Economies of scale are becoming increasingly important due to the trend towards large book retailers who demand low prices.

Outlook – Computer and Electronic and Electrical Products

A recent slow-down in this industry has impacted some companies. Businesses are reinvesting in computers and software while prices remain low. This industry is mainly supported by domestic demand, so there is potential for export in the future. The Alberta-California Venture Channel will allow better access to markets in the United States. Computer manufacturing, although a small industry, will likely see growth due to increased sales in the United States and Asia. Voice over Internet Protocol (Internet based telephone service) will present new opportunities.

Outlook – Nanotechnology

Nanotechnology is the science and technology of building electronic circuits and devices from single atoms and molecules. Nanotechnology plays a vital role in health, energy, biotechnology, education, manufacturing, engineering and computer science. There is a huge investment in Nanotechnology at the University of Alberta, which includes the National Institute for Nanotechnology and the Informatics Circle of Research Excellence (iCore) nanotechnology research teams. World markets for nanotechnology are expected to hit $1 trillion in less than 15 years.

Employment in the Manufacturing industry is expected to grow by a yearly average of 2.2 per cent, employing about 164,500 in 2008. The 2003 unemployment rate was 3.8 per cent.

Mining, and Oil and Gas Extraction

Overview

Businesses in the Oil and Gas Extraction industry operate or develop oil and gas field properties. Activities include everything from exploring for crude petroleum and natural gas through to preparing the oil and gas up to the point of shipping. This industry includes the production of crude petroleum, the mining and extraction of oil from oil shale and oil sands, the production of natural gas, sulfur recovery from natural gas, and recovery of hydrocarbon liquids.

The Mining industry is made up of businesses that extract naturally occurring mineral solids (such as coal and ores), liquid minerals (such as crude petroleum), and gases (such as natural gas). The term mining is used in the broad sense to include quarrying, well operations, beneficiating (crushing, screening, washing, and flotation) and other preparation customarily performed at the mine site or as a part of mining activity.

This industry employed about 98,900 people in 2003.

Outlook – Crude Oil and Bitumen

Despite being a cyclical industry, the outlook for the Alberta Crude Oil industry remains positive. Conventional crude oil production will likely continue to decline but bitumen, synthetic crude and natural gas liquids are expected to show strong growth. High commodity prices will likely continue because of ongoing tension in the Middle East, the uncertainty of the Russian oil supply and increasing global demand.

In the future, the industry will rely more on the development of higher cost heavy oil and bitumen reserves and less on cheaper conventional oil production. Oil sands production surpassed conventional oil production in Alberta last year with production reaching almost one million barrels a day. Many heavy oil and bitumen projects are capital and labour intensive and will lead to growth in other areas. These projects will require investments in oil upgrading facilities and pipelines to get the products to market. However, these massive projects can also create and be impacted by a shortage of skilled workers.

There are many planned expansions for major oil-producing companies in the Fort McMurray area. The costs of extracting mineable reserves and in-situ reserves of bitumen will continue to drop as companies use new technology and more efficient production methods to enhance resource development. Due to a strong industry outlook, many of these technologies and methods will be developed over the next five years. Edmonton will play a major role in providing equipment and services to these developments, while Calgary will remain the location of choice for the headquarters of many oil and gas companies.

One challenge in this industry is a shortage of workers. Having too few engineers, geoscientists, project managers, construction tradespeople and heavy-duty mechanics is jeopardizing major projects. The Alberta government is responding to industry's needs through its support of the apprenticeship and industry training system and through a Temporary Foreign Workers agreement with the federal government. But shortages continue to be expected during peak growth periods.

Outlook – Natural Gas

The outlook for Natural Gas in the North American economy looks bright. Alberta accounts for over 80 per cent of Canadian natural gas production. Half of Alberta's natural gas production is exported to the United States. A quarter of the production is exported to other provinces. Demand for exported Alberta gas will rise significantly as natural gas producers in the United States struggle to keep pace with demand. Such demand will reduce Alberta's natural gas reserves but will generate exploration and development, along with more processing plants, pipelines and storage facilities.

There has been a recent surge in shallow-well drilling in southeastern Alberta. The shallow wells are slightly less productive than conventional deep wells but are very cost effective.

Natural Gas in Coal (NGC), also known as coal bed methane, is a relatively new venture in Alberta. The feasibility of NGC production is not completely known but there is potentially 500 trillion cubic feet (over double the reserves of traditional natural gas) of NGC in Alberta. How much of that is actually extractable is not yet known. The Alberta government is examining the economic potential for extracting natural gas in coal. In addition, a multi-stakeholder advisory committee is reviewing the regulations that govern natural gas in coal

development to ensure they continue to balance economic benefits for Albertans with the protection of land, air and water resources.

Outlook – Coal Mining

Coal mining continues to play a major role in Alberta's economy. Coal's dominant role in the global energy mix, together with its responsibility for a share of carbon dioxide (CO2) emissions, focuses attention on how to continue using coal in a way that results in the least amount of harm to the global climate.

Alberta produces three types of marketable coal: sub-bituminous, which is used mainly for electricity generation within Alberta; thermal bituminous, which is exported and used to fuel electricity generators in distant markets; and metallurgical bituminous, which is exported and used for industrial applications such as steel making.

Alberta's exports of thermal and metallurgical coals have declined from three million tonnes in 2002 to 2.6 million tonnes in 2003, the lowest level in many years. Some Asian-Pacific countries are now purchasing coal from Australia, a direct competitor with Alberta. Fierce international competition has had an obvious impact on this industry.

Despite Canadian mines being relatively high-cost on the global scale, metallurgical coal mining is back on the upswing in Alberta, due in part to the rebound in world prices. A full economic recovery in the Asian-Pacific region will likely be necessary to bring the market back to a better balance between supply and demand.

The outlook for thermal coal is more encouraging due to its higher productivity when burned. Sub-bituminous coal, which accounts for 90 per cent of Alberta's production, will continue to fuel the province's power plants and play a major role in keeping Albertan's power prices at reasonable levels. Two new power-generating operations of about 500 megawatts have been approved for the province, and two more applications are under review. Coal will also fuel much of the growth in electricity generation in rapidly growing economies like China.

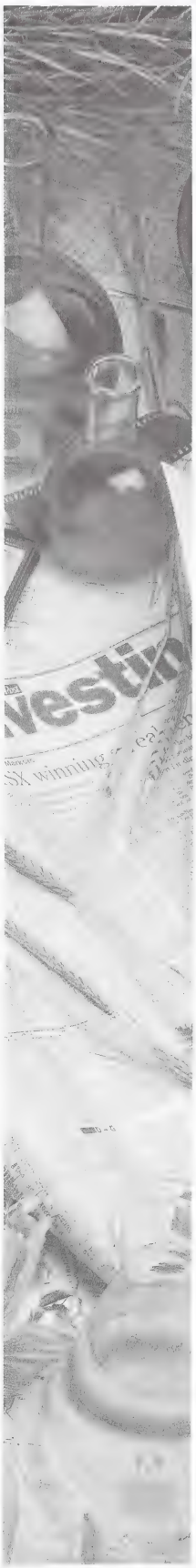
Employment in the Mining, and Oil and Gas Extraction industry is expected to grow by a yearly average of 1.7 per cent, employing about 107,800 in 2008. The 2003 unemployment rate was 4.7 per cent.

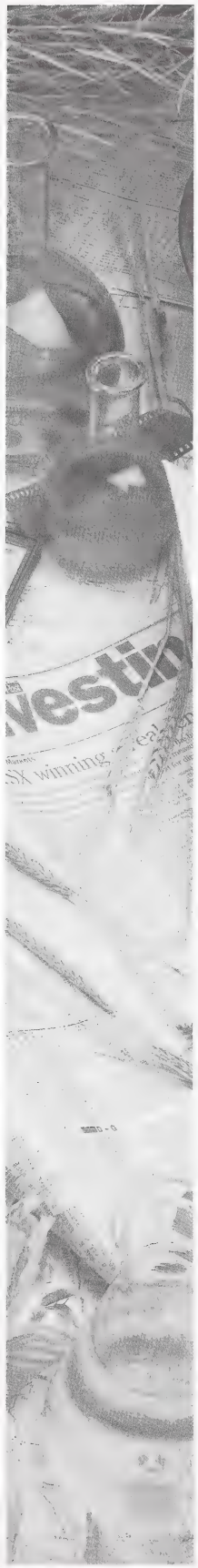
Other Services (except Public Administration)

Overview

The Other Services industry consists of businesses engaged in providing services not specifically provided for elsewhere in the North American Industrial Classification System. Activities include equipment and machinery repairing, promoting or administering religious activities, and providing dry cleaning and laundry services, personal care services, death care services, pet care services, photofinishing services, temporary parking services and dating services.

This industry employed about 80,400 people in 2003.





Outlook

This industry is driven by the prevalence of dual-income families and the resulting scarcity of time. To cope with growing demands on family time, more and more people are contracting out household functions such as cleaning, landscaping and snow removal.

Increases in disposable income also encourage expansion in luxury services. Aromatherapy, holistic treatments, beauty salons, spas and hairdressers will likely see growth. Increasing concerns about home security will provide growth in alarm systems, locking and bolting systems and house-sitting services.

With longer working hours fueling demand for even more services, significant growth is expected throughout this industry. The booming Construction industry increases demand for home-related services, while an aging population is expected to provide plenty of growth opportunities in service to seniors. An increasing interest in self-health will lead to strong demand for beauty care services.

Employment in the Other Services industry is expected to grow by a yearly average of 1.6 per cent, employing about 87,000 in 2008. The 2003 unemployment rate was 3.8 per cent.

Professional, Scientific and Technical Services

Overview

The Professional, Scientific and Technical Services industry is made up of businesses that specialize in performing professional, scientific and technical activities for others. These activities require a high degree of expertise and training. The businesses in this industry provide these services to clients in a variety of industries and, in some cases, to households. Activities include legal advice and representation; accounting, bookkeeping, and payroll services; architectural, engineering and specialized design services; computer services; consulting services; research services; advertising services; photographic services; translation and interpretation services; and veterinary services.

This industry does not include businesses primarily engaged in providing a range of day-to-day office administrative services, such as financial planning, billing and record-keeping, personnel, and physical distribution and logistics.

This industry employed about 118,500 people in 2003.

Outlook

In today's increasingly competitive and complex business environment, the trend is to use con-sulting firms to obtain specialized knowledge. Many types of specialists will be sought out in the future. For example, management consulting is expected to grow as companies focus on in-formation demands and knowledge management. Specialized advice for cross-border issues will likely be in high demand. Engineering consulting is expected to thrive as a result of re-source-related activities, warehousing, distribution, and light rail transit and road construction.

Calgary is emerging as the national leader in wireless technology research and development. This high-technology industry has a younger than average workforce.

The Professional, Scientific and Technical Services industry is expected to face several challenges. Engineers, land surveyors, accountants, legal professionals and assistants, and computer consultants are in short supply. Hiring from out-of-province because of local

shortages or location mismatches has become a developing trend. Offshore contract companies are aggressively competing with Alberta businesses. Technology continues to shift the type of work required, with added emphasis on knowledge management. Multi-skilled workers will be in high demand. Lower income in the Agriculture industry could mean service companies that support agriculture may see a decline in business.

Employment in the Professional, Scientific and Technical Services industry is expected to grow by a yearly average of 2.2 per cent, employing about 131,900 in 2008. The 2003 unemployment rate was 3.6 per cent.

Public Administration

Overview

The Public Administration industry consists of federal, provincial and local government agencies that administer, oversee and manage public programs and have executive, legislative or judicial authority over other institutions within a given area. These agencies also set policy, create laws, adjudicate civil and criminal legal cases, provide for public safety and for national defense. This industry typically organizes and finances the production of public goods and services.

This industry employed about 73,100 people in 2003.

Outlook

Government services are expected to grow at a moderate and steady rate. As in many industries, there will be difficulty attracting and retaining high quality staff. Utilizing contractors is a growing trend. This strategy reduces costs and gives governments access to specialized expertise.

Another trend in this industry is related to Albertans' ease with Internet technology. Albertans expect to be able to find information and gain access to government programs and services on-line. Cost-effective investment in technology will continue to be a key goal of the Alberta government, and the Alberta SuperNet will continue to be enhanced.

The Police Officer occupation, which falls under this industry, is expected to see strong growth.

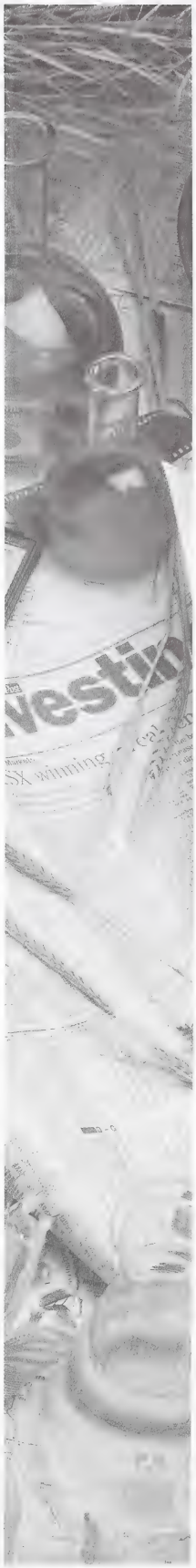
The Public Administration industry is expected to grow by a yearly average of about 1.0 per cent, employing about 76,800 in 2008. The 2003 unemployment rate was unavailable.

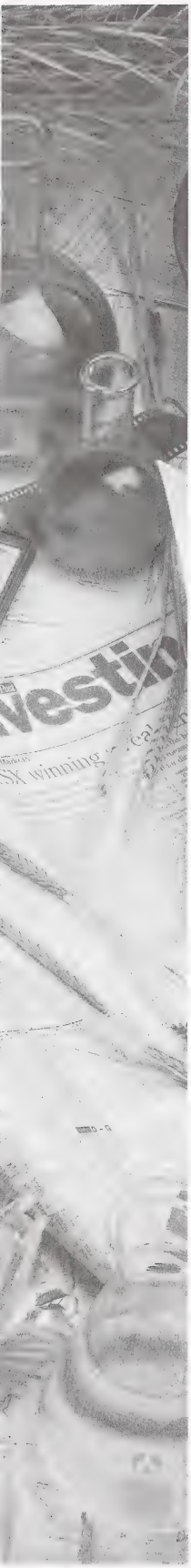
Retail Trade

Overview

The Retail Trade industry consists of businesses engaged in selling products directly to the public and providing services that accompany the sale of products. The industry includes food, beverages, drug products, shoes, clothing, household furniture and appliances, automobile sales and servicing, department store merchandise, after sales services such as repair and installation, and other retailing activities.

The Retail Trade industry is the province's largest employer. The industry employed about 196,300 people in 2003.





Outlook

The Retail Trade industry will continue to be competitive. Large chain stores are expanding to sell a wider variety of products as they try to encourage one-stop shopping. There is a growing trend towards specialty stores to compete with the large retailers. Information and communications technology will permit more direct selling and eliminate some wholesale and intermediary functions. Consumers will be able to choose what, when and where to buy. There should be some growth in non-store shopping options, including purchasing over the Internet, catalogue shopping and ordering by telephone. The current trend is for consumers to research products on-line and then make purchases in person to receive personal service from companies.

Alberta experienced recent growth in the Retail Trade industry, fuelled by low interest rates and employment growth. It is expected this growth will slow down slightly before picking up again. The threat of rising interest rates may curb consumer spending. Another potential challenge is worker shortages, especially in the northern area of the province where retail is picking up as a spin-off from oil and gas. The higher wages in the Construction, and Mining and Oil and Gas Extraction industries lure labour away from the Retail industry.

Employment in the Retail Trade industry is expected to grow by a yearly average of 1.9 per cent, employing about 215,200 in 2008. The 2003 unemployment rate was 4.3 per cent.

Transportation and Warehousing

Overview

The Transportation and Warehousing industry includes businesses that transport passengers and cargo, warehouse and store goods, and provide support activities related to modes of transportation. This industry uses transportation equipment or transportation related facilities as a productive asset. The type of equipment depends on the mode of transportation.

This industry employed about 94,700 people in 2003.

Outlook – Trucking

Trucking is the dominant form of freight transportation in Alberta. Edmonton will continue to be the primary transportation gateway to the north. Calgary is emerging as the wholesaling and distribution hub of Western Canada, integrating freight movements by truck, rail and air. In the future, Calgary may be a critical centre for distribution, warehousing and logistics. The city could emerge as an important part of a planned seamless Canamex trade route. The route will stretch from western Canada through the western United States to Mexico. Alberta has contributed significantly to this undertaking. When completed, Canamex will be a continuous four-lane highway from Mexico City through to Edmonton. It is expected to be finished in 2030.

Recent trends include just-in-time manufacturing practices that turn trucks into moving warehouses. Goods are produced and shipped on demand to reduce warehousing needs. Changes to the National Safety Code have made smaller trucks accountable to code regulations. Gas mileage in trucks has doubled in the last 20 years and engines continue to evolve. Driver hours have been limited to increase worker and public safety. Border delays

when entering or leaving the United States are magnifying the effects of the driver shortage. This combination of driver shortages and reduced working hours could prove to be a serious problem for the industry.

Outlook – Rail

The continuing discussions about passenger train service between Calgary and Edmonton are positive for the Railway industry. However, the overall outlook for this industry may be less optimistic. Despite growth in petrochemicals, other manufactured products and intermodal transport, there will likely be few gains in transporting coal, sulphur, wood pulp and agricultural commodities.

Railways are likely to focus even more on productivity and operating margins. New innovations are necessary for the Railway industry to expand. Recently, staff has been reduced in this industry. The current trend is to contract out car repair, track maintenance, train dispatching and local switching. Consolidation may continue in order to reduce costs.

Outlook – Air

Instability looms over the Air industry. If airline companies cannot successfully restructure and obtain new investors, their continued existence may be seriously threatened. The potential loss of one of Canada's major airlines could lead to job losses.

Competition in the Air industry is expected to increase, as recently formed regional airlines expand their services internationally. Rising costs are expected to continue as major airport improvements and expansions are made.

Outlook – Warehousing

It has become popular for many firms to meet their warehousing needs through outsourcing. Therefore the Warehousing industry will maintain its importance in the future. However, cost effective, state-of-the-art computer systems will be required throughout the industry in order for it to stay competitive.

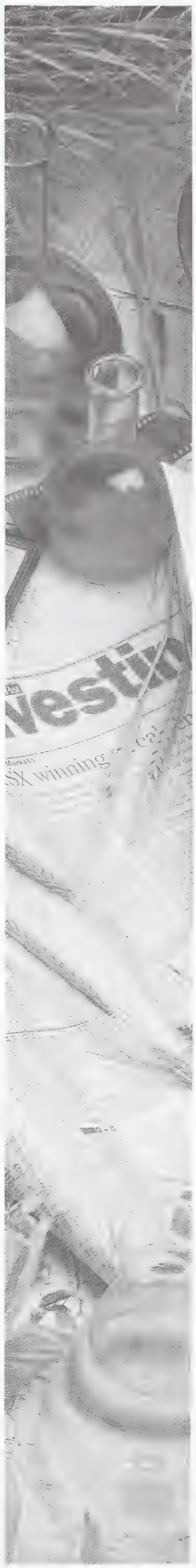
Employment in the Transportation and Warehousing industry is expected to grow by a yearly average of about 1.8 per cent, employing about 103,500 in 2008. The 2003 unemployment rate was 4.1 per cent.

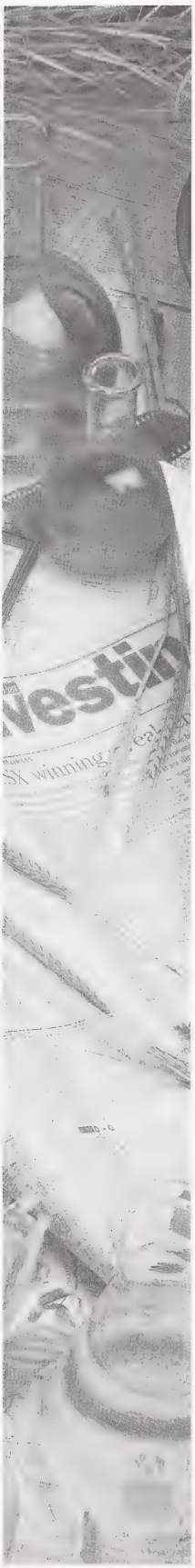
Utilities

Overview

The Utilities industry consists of businesses engaged in providing electricity, natural gas, steam supply, water supply and sewage removal services. Within this industry in Alberta, the specific activities associated with a particular utility may vary considerably. For example, one company may undertake the provision of gas or electricity while the delivery of gas or electricity is undertaken by another. On the other hand, both the treatment and delivery of water supply, and the collection, treatment and disposal of waste through sewer systems and sewage treatment facilities may be undertaken by one company, or these services may be provided by different companies.

This industry employed about 13,600 people in 2003.





Outlook

The outlook for the Utilities industry is strong. Technology and increased demand influence the trends in this industry. Alberta's restructured, competitive markets for electricity and natural gas have attracted private investment to ensure healthy supply-demand balances, improve reliability and provide consumers with options for meeting their energy needs.

Automated metering technologies will become common as a way to reduce costs. New generation capacity, including increased wind power developments in southern Alberta, is planned. Major upgrades and expansions of the Alberta power grid have been announced. Increased competition among electricity and gas retailers can be expected.

Employment in the Utilities industry is expected to grow by a yearly average of about 5.0 per cent to about 17,200 in 2008. The 2003 unemployment rate was unavailable.

Wholesale Trade

Overview

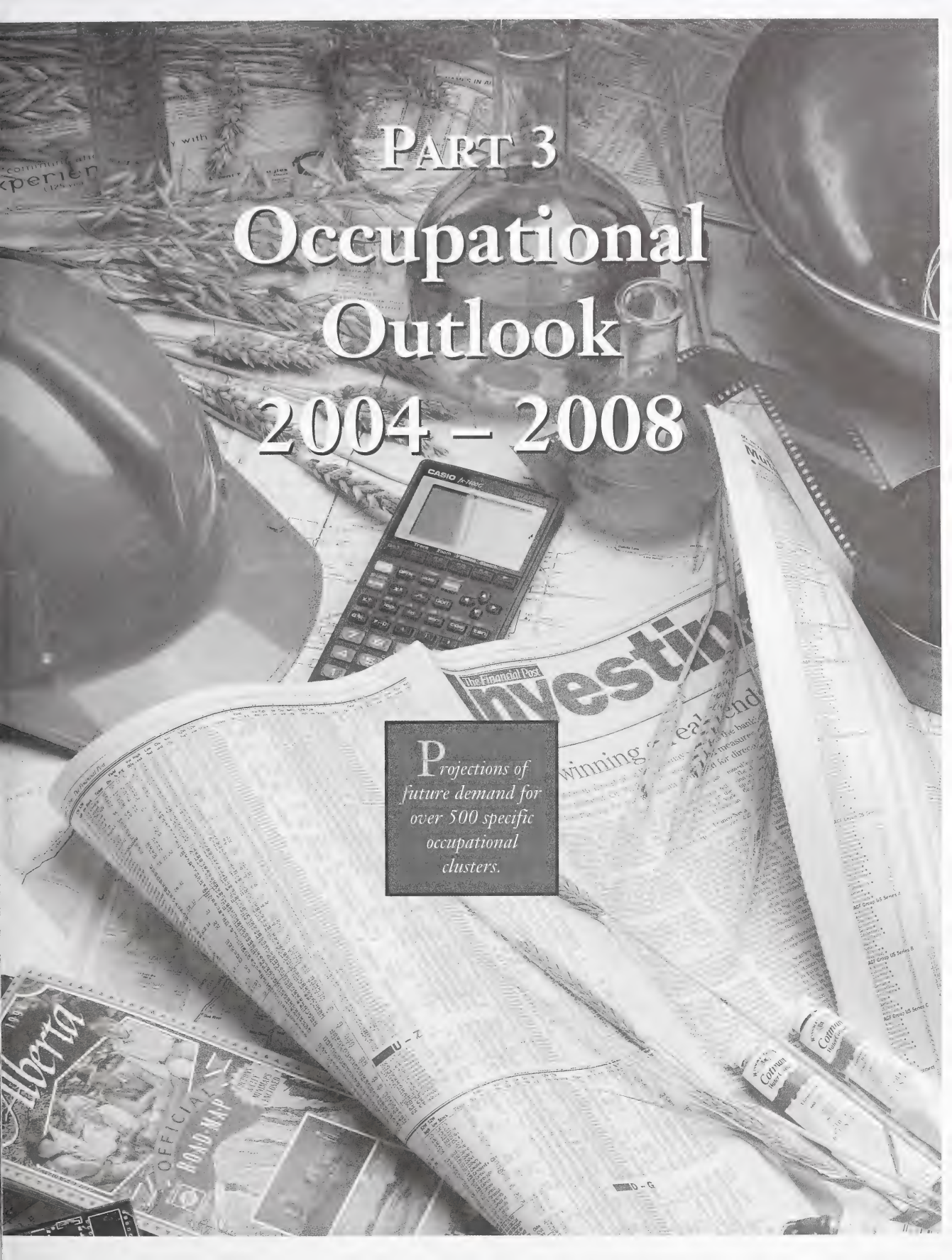
The Wholesale Trade industry is engaged in the purchase of merchandise for resale to retailers, or to commercial, industrial, institutional, farm and professional users. The wholesaling process is an intermediate step in distributing merchandise. This industry includes wholesale distributors, agents and brokers of goods such as farm products, petroleum products, food, beverage and tobacco products, personal and household goods, motor vehicles and parts, building materials and supplies, machinery and equipment.

This industry employed about 67,700 people in 2003.

Outlook

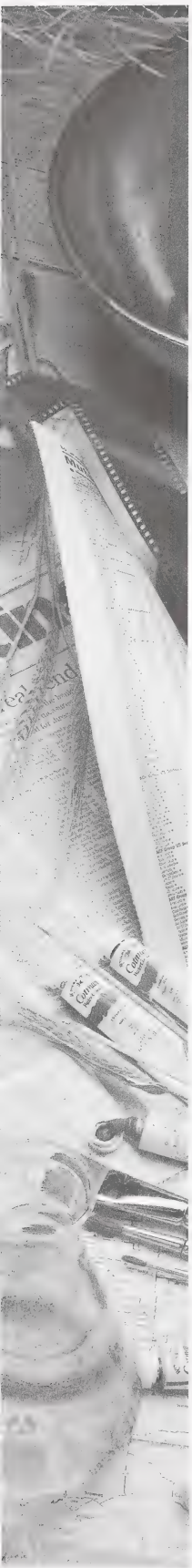
The Wholesale Trade relies heavily on information and transactions. It is being revolutionized by information and communications technology. Traditional paperwork is disappearing in favour of electronic communication and storage. Inventories are kept at a minimum in order to reduce overall costs. The Wholesale Trade industry is being restructured as new ways of delivering are developed. Growth in e-commerce is fueling a strong trend toward delivering goods from the factory directly to the consumer. With the help of information technology, the gap between producers, wholesalers and the general public is closing.

Employment in the Wholesale Trade industry is expected to grow by a yearly average of about 1.8 per cent, employing about 74,200 in 2008. The 2003 unemployment rate was 2.7 per cent.



Part 3
Occupational Outlook 2004 – 2008

Projections of future demand for over 500 specific occupational clusters.



Part 3 of *Alberta Careers Update 2004* presents an occupational outlook, or occupational projections, for Alberta for the period from 2004 to 2008. These projections are based on information that was available in late 2003. The demand for occupations changes according to a variety of factors, including the business environment, overall level of economic activity, changes in consumer behaviour, and perhaps most importantly, growth in specific industrial areas. The projections presented in this report are based on an analysis of these and other factors. Specifically, we have looked at the following:

- the outlook for the global and Alberta business environments
- the major forces of change
- the evolving world of work
- the trends in Alberta industries, including growth projections to the year 2008.

As discussed earlier, understanding what is going on in these four major areas is critical to understanding which occupations are likely to be more, or less, in demand. It also helps in understanding what the future holds in terms of general employment trends. The occupational projections presented here have been derived from the Alberta-modified Canadian Occupational Projection System (COPS) Outlook (December 2003). The study covered approximately 500 occupational groups under the National Occupational Classification (NOC) system.

This part of the report is divided into three sections:

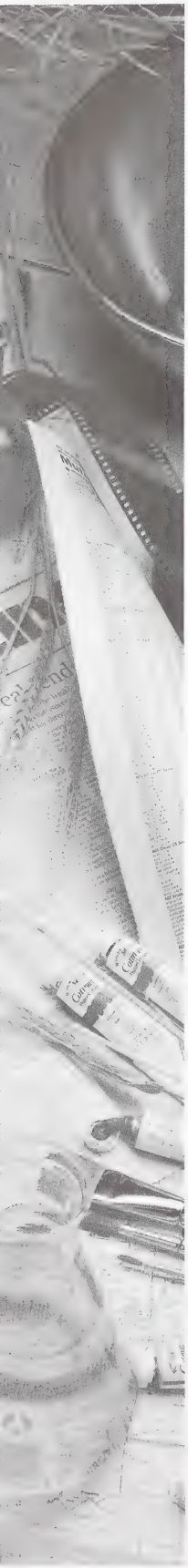
- Projected Demand: General Employment Trends
- Projected Demand: Broad Occupational Groups
- Projected Demand: Specific Occupational Groups

The first section provides projections regarding **general** employment trends.
The second section outlines projections regarding demand for **broad** occupational groups.
The last section presents projections regarding demand for **specific** occupational groups.
These occupational projections cover the period up to the year 2008.

Projected Demand: General Employment Trends

The following are general findings regarding future employment trends in Alberta.

- **Employment growth in Alberta will continue, but at a slower pace.** In the five years leading up to 2003, the annual average employment growth rate was 2.6 per cent. It is projected to be 1.8 per cent for 2004–2008. A major challenge will be matching the skills of Alberta's workforce to the demands of the new workplace and evolving economy. Society as a whole may have difficulty keeping pace with the predicted technological, social and economic growth and change. There may be high unemployment in one area or region, yet a serious shortage of workers in another area.
- **Employment growth will not fit neatly into any one category or industry.** There will be employment growth across a range of industries including Resources, Manufacturing, Services, and Information and Communications Technology. Still, within these broad categories, there will be weak and strong performers.
- **Education and training will be a key to success in the new economy.** At all levels — whether at the professional, technologist, trade or other — new jobs will favour the well qualified.
- **Over the next four years, there will be a strong demand for occupations that need university degrees.** This is particularly true for degrees that specialize in tourism, nursing, and industrial and electronic engineering. Projections indicate that over one fifth of all new jobs will go to university graduates. Middle and senior management occupations overall will likely grow and will probably account for another 10 per cent of new employment. Most of these occupations also require a university or college education.
- **Nearly one third of all new jobs will be in occupations requiring post-secondary college, technical or trades training.** Infrastructure, as well as large industrial and commercial construction projects, will need skilled tradespeople. There will also be demand for skilled workers in the Information and Communications Technology industry.
- **Just over one quarter of all new jobs will be in occupations requiring completion of Grade 12.** The demand for these occupations will be driven by growth in industries such as Retail, Food and Accommodation, and Tourism.
- **Occupations requiring less than Grade 12 will account for only about one out of every 10 new jobs.** In these new jobs, people with skills training will have a greater opportunity for successful employment.



Projected Demand: Broad Occupational Groups

The following is a general outlook for broad occupational groups in Alberta. For information on projected demand for specific occupation groups, please see the section titled Projected Demand: Specific Occupational Groups.

Over the next four years:

- **The demand for tradespeople will be solid.** This is especially true for construction-related tradespeople. There will be major projects in oil and gas, pipelines, infrastructure and retail space. There will be construction of basic infrastructure such as roads, airports, drainage systems and sewers, and light rail transit.
- **Health care workers will be in high demand.** There will be strong demand for nurses, medical radiation technologists and other health-related occupations. Overall, health occupations are facing a skill shortage (this is defined by an unemployment rate of less than three per cent).
- **Engineers in many areas will be in demand.** This will mainly be in the industrial and electronic areas. There may also be more demand from the Mining, and Oil and Gas Extraction industry.
- **There should be a strong demand for occupations in business, financial advisory and personal services.** As modern society becomes more complex, the demand for specialized management and financial expertise will grow. In a world of limited time, more people will contract out services. Such services include landscaping, food delivery services, housecleaning and household repair services.
- **Highly trained computer engineers, scientists and technicians will be in demand.** The Information and Communications Technology industry is a key part of the Alberta economy.

Projected Demand: Specific Occupational Groups

This section presents the Alberta-modified COPS Outlook growth projections for specific occupational groups. Here, you will find detailed information for over 500 occupational groups at the four-digit level of the National Occupational Classification (NOC) system.

How to Read this Information

The four-year projections for specific occupational groups are presented in a table format that provides the following information:

Occupational Groups

Occupational groups are listed alphabetically. In some cases, the occupation is listed by industry or type of occupation rather than just by title. For example, Aerospace Engineer is listed under "A" for aerospace instead of "E" for engineer.

NOC

The National Occupational Classification (NOC) is a system for classifying occupations in Canada. Each occupation has a NOC number. Please see the Glossary of Terms at the back of this publication for more information.

Annual Average Projected Growth Rate

An annual average growth rate has been projected for each occupational group. There are three categories or columns of growth as follows:

1. Above average growth: more than 2.3 per cent
2. Average growth: 1.3 to 2.3 per cent
3. Below average growth: less than 1.3 per cent

Number of People in this Occupational Group

This column shows approximately how many people worked in this occupational group in Alberta in 2003. The five categories are as follows:

1. 10,000 or more (very large)
2. 5,000–10,000 (large)
3. 1,000–5,000 (moderate)
4. 500–1,000 (small)
5. Less than 500 (very small)

Please see the Glossary of Terms in Appendix A at the back of this publication for other useful definitions.

For detailed information regarding specific occupations, including duties, wage and salary ranges and related education and training, see the OCCinfo site at: **www.alis.gov.ab.ca/occinfo**

Projected Demand: Specific Occupational Groups

Occupational Groups	NOC*	† Projected Growth: Above average	Average	Below average	Number of People in this Occupational Group in Alberta (2003)
Accommodation and Travel Attendants (Except Airline Travel)	6672			✓	Less than 500
Accommodation Service Managers	0632		✓		1,000–5,000
Accounting and Related Clerks	1431		✓		10,000 or more
Actors	5135		✓		500–1,000
Administrative Clerks	1441		✓		10,000 or more
Administrative Officers	1221		✓		10,000 or more
Administrative Services Manager – Other	0114		✓		1,000–5,000
Aerospace Engineers	2146		✓		Less than 500
Agricultural and Fish Products Inspectors	2222		✓		Less than 500
Agricultural and Related Service Contractors and Managers	8252			✓	Less than 500
Agricultural Representatives, Consultants and Specialists	2123			✓	Less than 500
Air Pilots, Flight Engineers and Flying Instructors	2271		✓		1,000–5,000
Air Traffic Control Occupations	2272		✓		500–1,000
Air Transport Ramp Attendants	7437		✓		1,000–5,000
Aircraft Assemblers and Aircraft Assembly Inspectors	9481		✓		Less than 500
Aircraft Instrument, Electrical and Avionics Mechanics, Technicians and Inspectors	2244	✓			1,000–5,000
Aircraft Mechanics and Aircraft Inspectors	7315		✓		1,000–5,000
Airline Sales and Service Agents	6433			✓	1,000–5,000
Ambulance Attendants and Other Paramedical Occupations	3234		✓		1,000–5,000
Amusements, Recreation and Sport Attendants	6670		✓		1,000–5,000
Animal Care Workers and Pet Groomers	6483			✓	1,000–5,000
Animal Health Technologists	3213		✓		500–1,000
Announcers and Broadcasters	5231		✓		500–1,000
Aquaculture and Marine Harvest Labourers	8613		✓		Less than 500
Aquaculture Operators and Managers	8257		✓		Less than 500
Architects	2151	✓			1,000–5,000
Architectural Technologists and Technicians	2251		✓		500–1,000
Archivists	5113		✓		Less than 500
Artisans and Craftspersons	5244		✓		1,000–5,000
Assemblers and Inspectors – Other	9498		✓		500–1,000
Assessors, Valuators and Appraisers	1235		✓		1,000–5,000
Athletes	5251		✓		Less than 500
Audio and Video Recording Technicians	5225		✓		500–1,000
Audiologists and Speech – Language Pathologists	3141		✓		500–1,000
Automotive Mechanical Installers and Servicers	7443		✓		1,000–5,000
Babysitters, Nannies and Parents' Helpers	6474		✓		10,000 or more
Bakers	6252		✓		1,000–5,000
Bartenders	6452		✓		1,000–5,000
Binding and Finishing Machine Operators	9473		✓		500–1,000
Biological Technologists and Technicians	2221		✓		500–1,000
Biologists and Related Scientists	2121		✓		1,000–5,000
Blacksmiths and Die Setters	7266		✓		Less than 500
Boat Assemblers and Inspectors	9491		✓		Less than 500

* National Occupational Classification Number

† Above average: more than 2.3%. Average: 1.3% – 2.3%. Below average: less than 1.3%

Projected Demand: Specific Occupational Groups

Occupational Groups	NOC*	† Projected Growth			Number of People in this Occupational Group in Alberta (2003)
		Above average	Average	Below average	
Boat Operators	7436		✓		Less than 500
Boilermakers	7262	✓			Less than 500
Bookkeepers	1231		✓		10,000 or more
Bricklayers	7281		✓		1,000–5,000
Broadcast Technicians	5224		✓		Less than 500
Bus Drivers, Subway and Other Transit Operators	7412		✓		5,000–10,000
Business Services Managers – Other	0123		✓		1,000–5,000
Business Services to Management – Professional Occupations	1122	✓			5,000–10,000
Butchers and Meat Cutters (Retail and Wholesale)	6251		✓		1,000–5,000
Butchers and Meat Cutters, Poultry Preparers and Related Workers (Industrial)	9462		✓		1,000–5,000
Buyers (Retail and Wholesale)	6233			✓	1,000–5,000
By-law Enforcement and Other Regulatory Officers	6463			✓	500–1,000
Cabinetmakers	7272		✓		1,000–5,000
Cable Television Service and Maintenance Technicians	7247			✓	500–1,000
Camera, Platemaking and Other Pre-Press Occupations	9472		✓		Less than 500
Cardiology Technologists	3217		✓		Less than 500
Carpenters	7271		✓		10,000 or more
Carpentry Trades – Contractors and Supervisors	7215		✓		1,000–5,000
Cashiers	6611		✓		10,000 or more
Cement Finishers	7282			✓	1,000–5,000
Chainsaw and Skidder Operators	8421			✓	Less than 500
Chefs	6241		✓		1,000–5,000
Chemical Engineers	2134	✓			1,000–5,000
Chemical Plant Machine Operators	9421	✓			1,000–5,000
Chemical Products Processing and Utilities – Labourers	9613	✓			Less than 500
Chemical Technologists and Technicians (Applied)	2211		✓		1,000–5,000
Chemists	2112		✓		500–1,000
Chiropractors	3122	✓			500–1,000
Civil Engineering Technologists and Technicians, and Construction Estimators	2230	✓			1,000–5,000
Civil Engineers	2131	✓			5,000–10,000
Cleaners – Light Duty	6661		✓		10,000 or more
Cleaners – Specialized	6662			✓	1,000–5,000
Cleaning Supervisors	6215		✓		1,000–5,000
Coaches	5252		✓		1,000–5,000
Collectors	1435		✓		1,000–5,000
College and Vocational Instructors	4131		✓		5,000–10,000
Commercial Divers	7382		✓		Less than 500
Community and Social Service Workers	4212		✓		5,000–10,000
Computer Engineers	2147		✓		1,000–5,000
Computer Operators	1421		✓		1,000–5,000
Computer Programmers	2163	✓			5,000–10,000
Computer Systems Analysts	2162	✓			10,000 or more
Concrete, Clay and Stone Forming Operators	9414		✓		500–1,000

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Projected Demand: Specific Occupational Groups

Occupational Groups	NOC*	† Projected Growth			Number of People in this Occupational Group in Alberta (2003)
		Above average	Average	Below average	
Conductors, Composers and Arrangers	5132		✓		Less than 500
Conference and Event Planners	1226		✓		1,000–5,000
Conservation and Fishery Officers	2224			✓	Less than 500
Construction Inspectors	2264	✓			1,000–5,000
Construction Managers	0711		✓		10,000 or more
Construction Trades Helpers and Labourers	7611			✓	10,000 or more
Construction Trades Installers, Repairers and Servicers – Contractors and Supervisors (Other)	7219			✓	1,000–5,000
Cooks	6242		✓		10,000 or more
Correctional Service Officers	6462		✓		1,000–5,000
Correspondence, Publication and Related Clerks	1452		✓		Less than 500
Couriers and Messengers	1463			✓	1,000–5,000
Court Clerks	1443		✓		1,000–5,000
Court Officers and Justices of the Peace	1227		✓		Less than 500
Court Recorders and Medical Transcriptionists	1244			✓	500–1,000
Crane Operators	7371		✓		1,000–5,000
Curators and Conservators	5112			✓	Less than 500
Customer Service, Information and Related Clerks	1453		✓		10,000 or more
Customs, Ship and Other Brokers	1236	✓			Less than 500
Dancers	5134		✓		500–1,000
Data Entry Clerks	1422			✓	5,000–10,000
Delivery Drivers	7414		✓		5,000–10,000
Dental Assistants	3411	✓			1,000–5,000
Dental Hygienists and Dental Therapists	3222	✓			1,000–5,000
Dental Technicians and Laboratory Bench Workers	3220	✓			Less than 500
Dentists	3113	✓			1,000–5,000
Denturists	3221		✓		Less than 500
Dietitians and Nutritionists	3132	✓			500–1,000
Dispatchers and Radio Operators	1475		✓		1,000–5,000
Drafting Technologists and Technicians	2253		✓		1,000–5,000
Dry Cleaning and Laundry Occupations	6681			✓	1,000–5,000
Dry Cleaning and Laundry Supervisors	6214		✓		Less than 500
Early Childhood Educators and Assistants	6470	✓			10,000 or more
Economic Analysis, Policy Development and Program Administration - Government Managers	0412		✓		500–1,000
Economic Development Officers and Marketing Researchers and Consultants	4163			✓	1,000–5,000
Economists and Economic Policy Researchers and Analysts	4162	✓			500–1,000
Editors	5122		✓		1,000–5,000
Education Policy Development and Program Administration – Government Managers	0413		✓		Less than 500
Education Policy Researchers, Consultants and Program Officers	4166	✓			1,000–5,000
Electric Appliance Servicers and Repairers	7332		✓		1,000–5,000
Electrical and Electronics Engineering Technologists and Technicians	2241	✓			5,000–10,000
Electrical and Electronics Engineers	2133	✓			1,000–5,000
Electrical Apparatus Manufacturing – Machine Operators and Inspectors	9487		✓		Less than 500
Electrical Appliance, Apparatus and Equipment Manufacturing – Assemblers and Inspectors	9484		✓		500–1,000

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Projected Demand: Specific Occupational Groups

Occupational Groups	NOC*	† Projected Growth			Number of People in this Occupational Group in Alberta (2003)
		Above average	Average	Below average	
Electrical Mechanics	7333		✓		Less than 500
Electrical Power Line and Cable Workers	7244	✓			1,000–5,000
Electrical Products Manufacturing – Supervisors	9223		✓		Less than 500
Electrical Trades and Telecommunications Occupations – Contractors and Supervisors	7212		✓		1,000–5,000
Electricians (Except Industrial and Power System)	7241		✓		5,000–10,000
Electricians (Industrial)	7242		✓		1,000–5,000
Electroencephalographic and Other Diagnostic Technologists	3218		✓		Less than 500
Electronic Service Technicians (Household and Business Equipment)	2242	✓			5,000–10,000
Electronics Assemblers, Fabricators, Inspectors and Testers	9483		✓		1,000–5,000
Electronics Manufacturing – Supervisors	9222		✓		Less than 500
Elementary and Kindergarten School Teachers	4142		✓		10,000 or more
Elementary and Secondary School Principals and Administrators	0313		✓		1,000–5,000
Elementary and Secondary School Teacher Assistants	6472			✓	5,000–10,000
Elevator Constructors and Mechanics	7318			✓	Less than 500
Employment Counsellors	4213		✓		1,000–5,000
Engineering Inspectors and Regulatory Officers	2262		✓		500–1,000
Engineering, Science and Architecture Managers	0210	✓			1,000–5,000
Engineers – Other Professional	2148		✓		500–1,000
Estheticians, Electrologists and Related Occupations	6482		✓		1,000–5,000
Executive Assistants	1222		✓		1,000–5,000
Executive Housekeepers	6213		✓		1,000–5,000
Fabric, Fur and Leather Cutters	9452		✓		Less than 500
Fabric, Fur and Leather Products Manufacturing – Inspectors and Testers	9454		✓		Less than 500
Fabric, Fur and Leather Products Manufacturing – Supervisors	9225		✓		Less than 500
Facility Operation and Maintenance Managers	0720	✓			1,000–5,000
Family Physicians and General Practitioners	3112	✓			1,000–5,000
Family, Marriage and Other Related Counsellors	4153		✓		1,000–5,000
Farm Supervisors and Specialized Livestock Workers	8253			✓	1,000–5,000
Farm Workers – General	8431			✓	10,000 or more
Farmers and Farm Managers	8251			✓	10,000 or more
Ferry Operators (Lock and Cable) and Related Occupations	7435		✓		Less than 500
Film and Video Camera Operators	5222	✓			Less than 500
Finance and Insurance Clerks – Supervisors	1212		✓		1,000–5,000
Financial and Investment Analysts	1112		✓		1,000–5,000
Financial Auditors and Accountants	1111		✓		10,000 or more
Financial Clerks – Banking, Insurance and Other	1434			✓	1,000–5,000
Financial Managers	0111		✓		1,000–5,000
Financial Officers – Other	1114	✓			5,000–10,000
Financial, Communications Carriers and Other Business Services – Senior Managers	0013		✓		1,000–5,000
Fire Chiefs and Senior Firefighting Officers	0642		✓		Less than 500
Firefighters	6262			✓	1,000–5,000
Fish Processing – Labourers	9618		✓		Less than 500
Fishing Masters and Officers	8261		✓		Less than 500

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Projected Demand: Specific Occupational Groups

Occupational Groups	NOC*	† Projected Growth			Number of People in this Occupational Group in Alberta (2003)
		Above average	Average	Below average	
Fishing Vessel Deckhands	8441		✓		Less than 500
Fishing Vessel Skippers and Fishermen/women	8262		✓		Less than 500
Flight Attendants and Pursers	6432		✓		1,000–5,000
Floor Covering Installers	7295			✓	1,000–5,000
Food and Beverage Processing – Process Control and Machine Operators	9461		✓		1,000–5,000
Food and Beverage Processing – Testers and Graders	9465	✓			Less than 500
Food and Beverage Servers	6453		✓		10,000 or more
Food Service and Kitchen Helpers	6642		✓		10,000 or more
Food Service Counter Attendants and Food Preparers	6641		✓		10,000 or more
Food Service Supervisors	6212	✓			5,000–10,000
Food, Beverage and Tobacco Processing – Labourers	9617		✓		1,000–5,000
Food, Beverage and Tobacco Processing – Supervisors	9213		✓		1,000–5,000
Forest Products Processing – Supervisors	9215		✓		1,000–5,000
Forestry and Logging Labourers	8616			✓	500–1,000
Forestry and Logging Supervisors	8211			✓	500–1,000
Forestry and Silviculture Workers	8422			✓	500–1,000
Forestry Professionals	2122			✓	Less than 500
Forestry Technologists and Technicians	2223		✓		500–1,000
Forging Machine Operators	9512		✓		Less than 500
Foundry Workers	9412		✓		Less than 500
Funeral Directors and Embalmers	6272		✓		500–1,000
Furniture and Fixture Assemblers and Inspectors	9492		✓		1,000–5,000
Furniture and Fixtures Manufacturing – Supervisors	9224	✓			500–1,000
Furniture Finishers and Refinishers	9494		✓		Less than 500
Gasfitters	7253		✓		Less than 500
Geological and Mineral Technologists and Technicians	2212		✓		1,000–5,000
Geological Engineers	2144	✓			Less than 500
Geologists, Geochemists and Geophysicists	2113		✓		1,000–5,000
Glass Forming and Finishing – Machine Operators and Glass Cutters	9413		✓		500–1,000
Glaziers	7292			✓	500–1,000
Goods Production, Utilities, Transportation and Construction – Senior Managers	0016			✓	1,000–5,000
Government Managers and Officials – Senior Managers	0012			✓	1,000–5,000
Grain Elevator Operators	6234			✓	Less than 500
Graphic Arts Technicians	5223		✓		Less than 500
Graphic Designers and Illustrating Artists	5241		✓		5,000–10,000
Grocery Clerks and Shelf Stockers	6622			✓	10,000 or more
Hairstylists and Barbers	6271		✓		10,000 or more
Harvesting Labourers	8611			✓	500–1,000
Health and Social Policy Development and Program Administration – Government Managers	0411	✓			500–1,000
Health and Social Policy Researchers, Consultants and Program Officers	4160	✓			1,000–5,000
Health Care – Managers	0311		✓		1,000–5,000
Health Diagnosing and Treating – Other Professional Occupations	3123		✓		Less than 500
Health Services – Other Support Aides and Assistants	3414	✓			5,000–10,000

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Projected Demand: Specific Occupational Groups

Occupational Groups	NOC*	† Projected Growth			Number of People in this Occupational Group in Alberta (2003)
		Above average	Average	Below average	
Health, Education, Social and Community Services and Membership Organizations – Senior Managers	0014		✓		500–1,000
Heavy Construction Equipment Crews – Contractors and Supervisors	7217		✓		5,000–10,000
Heavy Equipment Operators (Except Crane)	7421	✓			10,000 or more
Heavy-Duty Equipment Mechanics	7312		✓		5,000–10,000
Hide and Pelt Processing Workers	9453		✓		Less than 500
Hotel Front Desk Clerks	6435		✓		1,000–5,000
Human Resources Managers	0112		✓		1,000–5,000
Human Resources Specialists	1121		✓		5,000–10,000
Immigration, Unemployment Insurance and Revenue Officers	1228		✓		1,000–5,000
Industrial and Manufacturing Engineers	2141	✓			500–1,000
Industrial Designers	2252	✓			500–1,000
Industrial Electrical Motors and Transformers – Assemblers, Fabricators and Inspectors	9485		✓		Less than 500
Industrial Engineering and Manufacturing Technologists and Technicians	2233	✓			1,000–5,000
Industrial Instrument Technicians and Mechanics	2243	✓			1,000–5,000
Information Systems and Data Processing Managers	0213		✓		1,000–5,000
Instructors – Other	4216		✓		1,000–5,000
Instructors and Teachers of Disabled Persons	4215		✓		1,000–5,000
Insulators	7293		✓		1,000–5,000
Insurance Adjusters and Claims Examiners	1233		✓		1,000–5,000
Insurance Agents and Brokers	6231		✓		5,000–10,000
Insurance Underwriters	1234		✓		1,000–5,000
Insurance, Real Estate and Financial Brokerage Managers	0121			✓	1,000–5,000
Interior Designers	5242		✓		1,000–5,000
Investment Managers – Banking, Credit and Other	0122		✓		1,000–5,000
Ironing, Pressing and Finishing Occupations	6682			✓	500–1,000
Ironworkers	7264		✓		1,000–5,000
Janitors, Caretakers and Building Superintendents	6663			✓	10,000 or more
Jewellers, Watch Repairers and Related Occupations	7344		✓		Less than 500
Journalists	5123		✓		1,000–5,000
Judges	4111			✓	Less than 500
Land Surveyors	2154		✓		1,000–5,000
Landscape and Horticulture Supervisors	8256		✓		1,000–5,000
Landscape and Horticulture Technicians and Specialists	2225	✓			500–1,000
Landscape Architects	2152	✓			Less than 500
Landscaping and Grounds Maintenance Contractors and Managers	8255		✓		1,000–5,000
Landscaping and Grounds Maintenance Labourers	8612		✓		5,000–10,000
Lawyers and Quebec Notaries	4112		✓		5,000–10,000
Legal Secretaries	1242			✓	1,000–5,000
Letter Carriers	1462		✓		1,000–5,000
Librarians	5111			✓	1,000–5,000
Library and Archive Technicians and Assistants	5211			✓	1,000–5,000
Library Clerks	1451		✓		500–1,000
Library, Archive, Museum and Art Gallery Managers	0511		✓		Less than 500

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Projected Demand: Specific Occupational Groups

Occupational Groups	NOC*	† Projected Growth			Number of People in this Occupational Group in Alberta (2003)
		Above average	Average	Below average	
Library, Correspondence and Related Information Clerks – Supervisors	1213		✓		1,000–5,000
Loan Officers	1232		✓		1,000–5,000
Logging Machinery Operators	8241			✓	500–1,000
Longshore Workers	7451		✓		Less than 500
Lumber Graders and Other Wood Processing – Inspectors and Graders	9436		✓		500–1,000
Machine Fitters	7316		✓		Less than 500
Machining Tool Operators	9511	✓			500–1,000
Machinists and Related Occupations – Supervisors	7211	✓			500–1,000
Machinists, Machining and Tooling Inspectors	7231		✓		5,000–10,000
Mail and Message Distribution Occupations – Supervisors	1214		✓		1,000–5,000
Mail, Postal and Related Clerks	1461			✓	1,000–5,000
Maitres d'hotel and Hosts/Hostesses	6451		✓		1,000–5,000
Manufacturing Managers	0911	✓			5,000–10,000
Mapping and Related Technologists and Technicians	2255		✓		500–1,000
Material Handlers	7452			✓	10,000 or more
Mathematicians, Statisticians and Actuaries	2161		✓		Less than 500
Mechanic Trades – Contractors and Supervisors	7216		✓		1,000–5,000
Mechanical and Metal Products Manufacturing Supervisors – Other	9226	✓			1,000–5,000
Mechanical Assemblers and Inspectors	9486		✓		1,000–5,000
Mechanical Engineering Technologists and Technicians	2232	✓			1,000–5,000
Mechanical Engineers	2132	✓			1,000–5,000
Medical and Hospital Assistants	6631		✓		1,000–5,000
Medical Laboratory Technicians	3212	✓			1,000–5,000
Medical Laboratory Technologists and Pathologists' Assistants	3211	✓			1,000–5,000
Medical Radiation Technologists	3215	✓			1,000–5,000
Medical Secretaries	1243		✓		1,000–5,000
Medical Sonographers	3216	✓			Less than 500
Medical Technologists and Technicians (Except Dental Health) – Other	3219		✓		Less than 500
Metal Fabrication – Labourers	9612	✓			1,000–5,000
Metal Forming, Shaping and Erecting Occupations – Contractors and Supervisors	7214		✓		1,000–5,000
Metal Products Machine Operators – Other	9516	✓			Less than 500
Metallurgical and Materials Engineers	2142	✓			Less than 500
Metalworking Machine Operators	9514	✓			500–1,000
Meteorological Technicians	2213		✓		Less than 500
Meteorologists	2114		✓		Less than 500
Midwives and Practitioners of Natural Healing	3232		✓		Less than 500
Millwrights and Industrial Mechanics (Except Textile) – Construction	7311		✓		5,000–10,000
Mine Labourers	8614		✓		Less than 500
Mineral and Metal Processing – Central Control and Process Operators	9231		✓		Less than 500
Mineral and Metal Processing – Inspectors and Testers	9415		✓		Less than 500
Mineral and Metal Processing – Labourers	9611		✓		500–1,000
Mineral and Metal Processing – Machine Operators	9411		✓		500–1,000
Mineral and Metal Processing – Supervisors	9211		✓		500–1,000

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Projected Demand: Specific Occupational Groups

Occupational Groups	NOC*	† Projected Growth			Number of People in this Occupational Group in Alberta (2003)
		Above average	Average	Below average	
Mining and Quarrying – Supervisors	8221			✓	Less than 500
Mining Engineers	2143	✓			Less than 500
Motion Pictures, Broadcasting and the Performing Arts – Other Technical Occupations	5226		✓		Less than 500
Motion Pictures, Broadcasting and the Performing Arts–Support and Assisting Occupations	5227		✓		500–1,000
Motor Transport and Other Ground Transit Operators – Supervisors	7222		✓		1,000–5,000
Motor Vehicle Assemblers, Inspectors and Testers	9482		✓		Less than 500
Motor Vehicle Assembling – Supervisors	9221	✓			Less than 500
Motor Vehicle Body Repairers	7322		✓		1,000–5,000
Motor Vehicle Mechanics, Technicians and Mechanical Repairers	7321		✓		10,000 or more
Motorcycle and Other Related Mechanics	7334		✓		Less than 500
Museum and Gallery Technical Occupations	5212			✓	Less than 500
Musicians and Singers	5133		✓		1,000–5,000
Natural and Applied Science Policy Researchers, Consultants and Program Officers	4161		✓		1,000–5,000
Nondestructive Testers and Inspectors	2261		✓		500–1,000
Nurse Aides and Orderlies	3413	✓			10,000 or more
Nursery and Greenhouse Operators and Managers	8254			✓	Less than 500
Nursery and Greenhouse Workers	8432			✓	1,000–5,000
Nurses – Registered	3152	✓			10,000 or more
Nurses (Head) and Supervisors	3151	✓			1,000–5,000
Nursing Assistants – Registered	3233		✓		5,000–10,000
Occupational Therapists	3143	✓			500–1,000
Office and Administrative Support Clerks – Supervisors (General)	1211	✓			1,000–5,000
Office Clerks (General)	1411			✓	10,000 or more
Oil and Gas Drilling and Service – Supervisors	8222		✓		5,000–10,000
Oil and Gas Drilling, Servicing and Related Labourers	8615			✓	5,000–10,000
Oil and Gas Well Drillers, Servicers, Testers and Related Workers	8232	✓			10,000 or more
Oil and Gas Well Drilling Workers and Services Operators	8412		✓		5,000–10,000
Oil and Solid Fuel Heating Mechanics	7331			✓	Less than 500
Opticians	3231		✓		500–1,000
Optometrists	3121	✓			Less than 500
Outdoor Sport and Recreational Guides	6442		✓		Less than 500
Painters and Coaters, Manufacturing	9496		✓		1,000–5,000
Painters and Decorators	7294			✓	5,000–10,000
Painters, Sculptors and Other Visual Artists	5136		✓		1,000–5,000
Paper Converting Machine Operators	9435		✓		Less than 500
Papermaking and Coating Control Operators	9234		✓		Less than 500
Papermaking and Finishing Machine Operators	9433		✓		Less than 500
Paralegal and Related Occupations	4211		✓		5,000–10,000
Payroll Clerks	1432		✓		1,000–5,000
Performers – Other	5232			✓	Less than 500
Personal Consultants – Image, Social and Other	6481		✓		Less than 500
Personal Service Occupations – Other	6484		✓		Less than 500
Personnel and Recruitment Officers	1223		✓		1,000–5,000

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Projected Demand: Specific Occupational Groups

Occupational Groups	NOC*	† Projected Growth			Number of People in this Occupational Group in Alberta (2003)
		Above average	Average	Below average	
Personnel Clerks	1442		✓		1,000–5,000
Pest Controllers and Fumigators	7444		✓		Less than 500
Petroleum Engineers	2145		✓		5,000–10,000
Petroleum, Gas and Chemical Process Operators	9232			✓	1,000–5,000
Petroleum, Gas and Chemical Processing and Utilities – Supervisors	9212	✓			1,000–5,000
Pharmacists	3131	✓			1,000–5,000
Photographers	5221		✓		1,000–5,000
Photographic and Film Processors	9474			✓	500–1,000
Physical Sciences – Other Professional Occupations	2115		✓		Less than 500
Physicists and Astronomers	2111		✓		Less than 500
Physiotherapists	3142	✓			1,000–5,000
Pipefitting Trades – Contractors and Supervisors	7213		✓		1,000–5,000
Plasterers, Drywall Installers and Finishers and Lathers	7284		✓		5,000–10,000
Plastic and Rubber Products Manufacturing – Supervisors	9214		✓		Less than 500
Plastics Processing Machine Operators	9422	✓			1,000–5,000
Plastics Products Assemblers, Finishers and Inspectors	9495	✓			500–1,000
Plating, Metal Spraying and Related Operators	9497		✓		Less than 500
Plumbers	7251	✓			5,000–10,000
Police Officers – Commissioned	0641		✓		Less than 500
Police Officers (Except Commissioned)	6261			✓	5,000–10,000
Postal and Courier Services Managers	0132		✓		Less than 500
Post-Secondary and Vocational Training – Educational Administrators	0312		✓		1,000–5,000
Post-Secondary Teaching and Research Assistants	4122	✓			5,000–10,000
Power System Electricians	7243	✓			Less than 500
Power Systems and Power Station Operators	7352	✓			500–1,000
Primary Production Managers (Except Agriculture)	0811		✓		1,000–5,000
Printing and Related Occupations – Supervisors	7218		✓		1,000–5,000
Printing Machine Operators	9471		✓		500–1,000
Printing Press Operators	7381		✓		1,000–5,000
Probation and Parole Officers and Related Occupations	4155			✓	Less than 500
Processing, Manufacturing and Utilities – Labourers	9619		✓		1,000–5,000
Producers, Directors, Choreographers and Related Occupations	5131		✓		1,000–5,000
Production Clerks	1473		✓		1,000–5,000
Products Machine Operators – Other	9517		✓		Less than 500
Products Manufacturing and Assembly Supervisors – Other	9227		✓		500–1,000
Program Officers Unique to Government	4168		✓		Less than 500
Property Administrators	1224			✓	1,000–5,000
Protective Service Occupations – Other	6465		✓		500–1,000
Psychologists	4151	✓			1,000–5,000
Public Administration – Other Managers	0414		✓		500–1,000
Public and Environmental Health and Occupational Health and Safety – Inspectors	2263			✓	1,000–5,000
Public Relations and Communications – Professional Occupations	5124		✓		1,000–5,000
Public Works and Maintenance Labourers	7621		✓		1,000–5,000

* National Occupational Classification Number

† Above average: more than 2.3%. Average: 1.3% – 2.3%. Below average: less than 1.3%

Projected Demand: Specific Occupational Groups

Occupational Groups	NOC*	† Projected Growth			Number of People in this Occupational Group in Alberta (2003)
		Above average	Average	Below average	
Public Works Maintenance Equipment Operators	7422	✓			1,000–5,000
Publishing, Motion Pictures, Broadcasting and Performing Arts – Managers	0512		✓		500–1,000
Pulping Control Operators	9233		✓		Less than 500
Pulpmill Machine Operators	9432			✓	500–1,000
Purchasing Agents and Officers	1225	✓			1,000–5,000
Purchasing and Inventory Clerks	1474	✓			1,000–5,000
Purchasing Managers	0113	✓			500–1,000
Railway and Marine Traffic Controllers	2275		✓		Less than 500
Railway and Motor Transport Labourers	7622			✓	500–1,000
Railway and Yard Locomotive Engineers	7361		✓		500–1,000
Railway Carmen/women	7314		✓		Less than 500
Railway Conductors and Brakemen/women	7362		✓		500–1,000
Railway Track Maintenance Workers	7432			✓	500–1,000
Railway Transport Operations – Supervisors	7221		✓		1,000–5,000
Railway Yard Workers	7431		✓		Less than 500
Real Estate Agents and Salespersons	6232		✓		1,000–5,000
Receptionists and Switchboard Operators	1414			✓	5,000–10,000
Recording, Distributing and Scheduling Occupations –Supervisors	1215		✓		1,000–5,000
Records and File Clerks	1413			✓	1,000–5,000
Recreation and Sport Program and Service Directors	0513		✓		500–1,000
Recreation and Sports – Program Leaders and Instructors	5254		✓		5,000–10,000
Recreation and Sports Program Supervisors and Consultants	4167		✓		1,000–5,000
Refrigeration and Air Conditioning Mechanics	7313			✓	1,000–5,000
Religion – Ministers	4154		✓		1,000–5,000
Religious Occupations – Other	4217			✓	Less than 500
Repairers and Servicers – Other	7445	✓			1,000–5,000
Residential and Commercial Installers and Servicers	7441		✓		1,000–5,000
Residential Home Builders and Renovators	0712		✓		1,000–5,000
Respiratory Therapists and Clinical Perfusionists	3214	✓			500–1,000
Restaurant and Food Service Managers	0631		✓		10,000 or more
Retail Salespersons and Sales Clerks	6421		✓		10,000 or more
Retail Trade Managers	0621		✓		10,000 or more
Retail Trade Supervisors	6211	✓			10,000 or more
Roofers and Shinglers	7291			✓	1,000–5,000
Rubber and Plastic Products Manufacturing – Labourers	9615		✓		500–1,000
Rubber Processing Machine Operators and Related Workers	9423	✓			500–1,000
Sale Specialists, Wholesale Trade – Technical	6221		✓		10,000 or more
Sales Occupations – Other	6623		✓		5,000–10,000
Sales Representatives, Wholesale Trade – Non-Technical	6411		✓		10,000 or more
Sales, Marketing and Advertising Managers	0611		✓		10,000 or more
Sawmill Machine Operators	9431		✓		1,000–5,000
School and Guidance Counsellors	4143		✓		1,000–5,000
Secondary School Teachers	4141		✓		10,000 or more

* National Occupational Classification Number

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Projected Demand: Specific Occupational Groups

Occupational Groups	NOC*	† Projected Growth: Above average	Average	Below average	Number of People in this Occupational Group in Alberta (2003)
Secretaries (Except Legal and Medical)	1241			✓	10,000 or more
Securities Agents, Investment Dealers and Traders	1113	✓			1,000–5,000
Security Guards and Related Occupations	6651		✓		5,000–10,000
Service Occupations – Other	6683			✓	1,000–5,000
Service Station Attendants	6621			✓	1,000–5,000
Service Supervisors – Other	6216		✓		1,000–5,000
Services Managers – Other	0651		✓		1,000–5,000
Sewing Machine Operators	9451		✓		1,000–5,000
Sheet Metal Workers	7261			✓	1,000–5,000
Sheriffs and Bailiffs	6461		✓		Less than 500
Shippers and Receivers	1471	✓			10,000 or more
Shoe Repairers and Shoemakers	7343		✓		Less than 500
Small Engine and Equipment Mechanics – Other	7335			✓	500–1,000
Social Sciences – Other Professional Occupations	4169		✓		Less than 500
Social Workers	4152		✓		1,000–5,000
Social, Community and Correctional Services –Managers	0314		✓		1,000–5,000
Specialist Physicians	3111	✓			1,000–5,000
Sports Officials and Referees	5253		✓		500–1,000
Stationary Engineers and Auxiliary Equipment Operators	7351		✓		1,000–5,000
Steamfitters, Pipefitters and Sprinkler System Installers	7252	✓			1,000–5,000
Storekeepers and Parts Clerks	1472		✓		1,000–5,000
Structural Metal and Platework Fabricators and Fitters	7263		✓		500–1,000
Surface Mining, Quarrying and Construction – Drillers and Blasters	7372		✓		Less than 500
Survey Interviewers and Statistical Clerks	1454		✓		1,000–5,000
Survey Technologists and Technicians	2254		✓		500–1,000
Tailors, Dressmakers, Furriers and Milliners	7342			✓	1,000–5,000
Taxi and Limousine Drivers and Chauffeurs	7413		✓		1,000–5,000
Telecommunications Carriers Managers	0131		✓		1,000–5,000
Telecommunications Installation and Repair Workers	7246			✓	1,000–5,000
Telecommunications Line and Cable Workers	7245			✓	1,000–5,000
Telephone Operators	1424			✓	500–1,000
Tellers – Financial Services	1433			✓	10,000 or more
Textile Dyeing and Finishing Machine Operators	9443		✓		Less than 500
Textile Fibre and Yarn Preparation Machine Operators	9441		✓		Less than 500
Textile Inspectors, Graders and Samplers	9444		✓		Less than 500
Textile Machinery Mechanics and Repairers	7317		✓		Less than 500
Textile Processing – Labourers	9616		✓		Less than 500
Textile Processing – Supervisors	9216		✓		Less than 500
Textile, Leather and Fur Products – Patternmakers	5245		✓		Less than 500
Theatre, Fashion, Exhibit and Other Creative Designers	5243		✓		500–1,000
Therapy and Assessment – Other Professional Occupations	3144		✓		500–1,000
Therapy and Assessment – Other Technical Occupations	3235		✓		1,000–5,000
Ticket and Cargo Agents and Related Clerks (Except Airline)	6434			✓	Less than 500

* National Occupational Classification Number
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Projected Demand: Specific Occupational Groups

Occupational Groups	NOC*	† Projected Growth			Number of People in this Occupational Group in Alberta (2003)
		Above average	Average	Below average	
Tilesetters	7283		✓		500–1,000
Tool and Die Makers	7232			✓	Less than 500
Tour and Travel Guides	6441			✓	Less than 500
Trade, Broadcasting and Other Services – Senior Managers	0015		✓		1,000–5,000
Trades and Related Occupations – Other	7383			✓	500–1,000
Trades Helpers and Labourers – Other	7612			✓	500–1,000
Translators, Terminologists and Interpreters	5125		✓		500–1,000
Transportation Managers	0713		✓		1,000–5,000
Transportation Route and Crew Schedulers	1476		✓		500–1,000
Trappers and Hunters	8442		✓		Less than 500
Travel Counsellors	6431		✓		1,000–5,000
Truck Drivers	7411		✓		10,000 or more
Typesetters and Related Occupations	1423			✓	500–1,000
Typists and Word Processing Operators	1412			✓	1,000–5,000
Underground Mine Service and Support Workers	8411		✓		Less than 500
Underground Production and Development Miners	8231	✓			1,000–5,000
University Professors	4121		✓		5,000–10,000
Upholsterers	7341		✓		1,000–5,000
Urban and Land Use Planners	2153	✓			1,000–5,000
Utilities Managers	0912	✓			500–1,000
Veterinarians	3114			✓	500–1,000
Visiting Homemakers, Housekeepers and Related Occupations	6471		✓		5,000–10,000
Water and Waste Plant Operators	9424		✓		500–1,000
Water Transport – Deck Crew	7433		✓		Less than 500
Water Transport – Deck Officers	2273		✓		Less than 500
Water Transport – Engine Room Crew	7434		✓		Less than 500
Water Transport – Engineer Officers	2274		✓		Less than 500
Water Well Drillers	7373		✓		Less than 500
Waterworks and Gas Maintenance Workers	7442	✓			Less than 500
Weavers, Knitters and Other Fabric-Making Operators	9442		✓		500–1000
Welders and Soldering Machine Operators	9510		✓		10,000 or more
Wood Processing Machine Operators – Other	9434		✓		500–1,000
Wood Products Assemblers and Inspectors – Other	9493		✓		1,000–5,000
Wood, Pulp and Paper Processing – Labourers	9614			✓	1,000–5,000
Woodworking Machine Operators	9513		✓		1,000–5,000
Writers	5121		✓		1,000–5,000

* National Occupational Classification Number

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Appendix A
Glossary of Terms

The following definitions will help clarify some of the terms used in this publication.

Baby Boom

Between 1945 and 1966 there was a significant increase in the number of babies born in Canada. It was a time of peace and prosperity following the Second World War. The large population born during those years is called the baby boomers and dominates Canadian society. The baby boom period was followed by a "baby bust" period characterized by a relatively low number of babies.

Demographics

Demographics are the statistical study of various features of the population such as age, education, employment, gender and average number of children per family. "Canada has...people between the ages of 34 and 55" is a demographic statement. Demographics can provide very accurate statistics that can be used to make predictions of future trends.

Economic Indicator

An economic indicator is a statistic that provides information about the economy. Economic indicators are a standard part of business reporting. Examples of economic indicators include the Bank of Canada prime rate, inflation, the Gross National Product (GNP), the Gross Domestic Product (GDP) and the exchange rate.

Employment Rate

The employment rate represents the number of people employed expressed as a percentage of the working age population (persons 15 years of age and older). The employment rate reflects, to a certain extent, the state of the economy. A high employment rate indicates the ability of an economy to create jobs and to employ a large percentage of its working age population.

Exports

Exports are goods and services sold outside the country. Alberta's economy relies on exports to make it strong. When exports drop, it can affect many other industries such as Manufacturing and Transportation. Exports are affected by changes in the overall economy, including the interest and exchange rates.

Gross Domestic Product (GDP)

The Gross Domestic Product is the monetary value of all goods and services produced in a certain area over a given period of time. GDP is used as a measure of economic growth. A rise in GDP indicates a rise in overall economic activity.

Industry
Industry refers to the nature of the economic activity carried out in an establishment. Generally, an establishment is a producing unit and industry is a group of establishments engaged in similar types of activities producing similar goods and services. There are major industry groups and, for classification purposes, there are smaller industries within the broader industry groups.

Inflation
Inflation is the increase in the amount of money and credit circulating in the economy because of a general rise in prices. Statistics Canada produces the monthly Consumer Price Index, which is an indicator of the rate of price changes for goods and services bought by consumers.

Labour Force
The labour force is the portion of the working age population (people over 15) who are employed or actively seeking work. Working age population does not include people who are living on Indian reserves, full-time members of the armed forces or inmates of institutions.

National Occupational Classification (NOC)
This is a numeric system used for classifying occupations and cóllecting statistics. The NOC is a listing of occupations that is used to classify all job titles in Canada. The system goes from very general categories to more specific ones. Virtually every occupation in Canada can be found in the National Occupational Classification.

North American Industry Classification System (NAICS)
NAICS provides the structure for which the statistical agencies of Canada, Mexico, and the United States compile comparable industry data. The NAICS structure consists of sectors, subsectors, industry groups and industries. This structure reflects the levels at which data comparability was agreed upon by the statistical agencies of the three countries.

Occupation
An occupation is a group of jobs with similar responsibilities that require a common set of skills. For example, "computer programmer" is an occupation. Programmers may have permanent or temporary jobs working for specific employers, work on a freelance or contract basis, be self-employed, work full-time or part-time, be paid for their work or volunteer their services. They may change jobs or hold several jobs at one time, but by having the same type of duties or tasks they are computer programmers.

Sector
A sector is the broadest grouping level for industries. A sector includes many different industries.

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